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HYGEIA

THE HEALTH MAGAZINE

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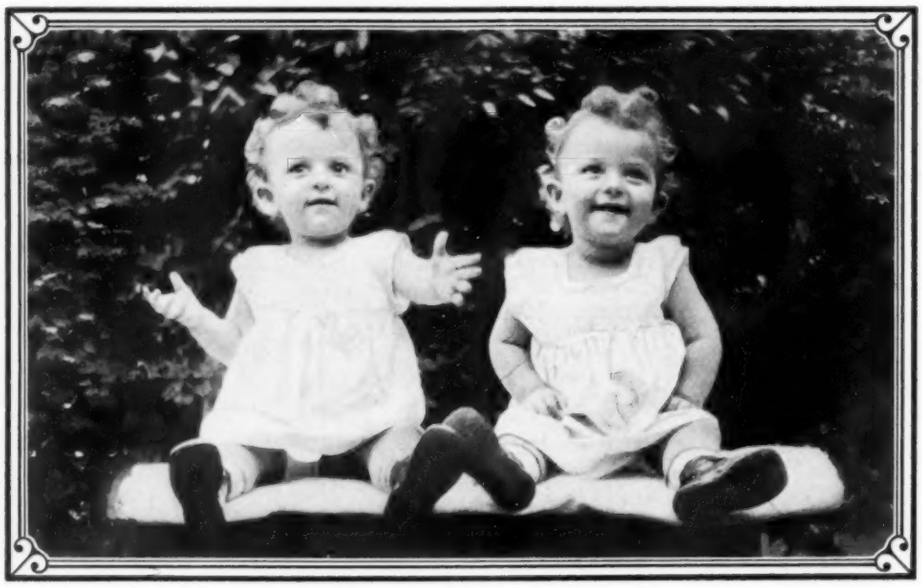

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THE HEALTH MAGAZINE

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AMONG THE CONTRIBUTORS

A movement worthy of wider adoption is the present campaign in Philadelphia to prevent deaths from appendicitis by educating the public particularly as to the dangers of taking laxatives for abdominal pain. DR. JOHN O. BOWER'S article is inspired by that campaign. DR. IRA S. WILE is one of our foremost child psychologists and is internationally known for his books and magazine articles dealing with problems of conduct. He is a frequent contributor to HYGEIA.

The article by DR. W. W. BAUER, a Wisconsin health commissioner, is on a timely subject, since April is the month in which the National Tuberculosis Association conducts its spring educational campaign.

DR. HENRY PLEASANTS, JR., is not intent on his professional duties to the entire exclusion of family interests; what he did for his boys and the home football team is apparent from his description of the camp he planned. DR. EDWARD KREMERS, director of the course in pharmacy at the University of Wisconsin, is known as the outstanding authority on medicinal plants in the United States.

He does it amusingly, as usual, but DR. GAYLORD W. GRAVES is much in earnest in his warning against the numerous hazards that menace the child in his own home. NORMAN GOLDSMITH this month contributes his second article to HYGEIA. JAMES A. TOBEY, DR.P.H., is a familiar contributor on foods and other practical health topics. This month he turns historian.

DR. B. C. H. HARVEY continues to astound us with his facts and figures on the wonders within our own bodies. The third of a series on cancer is contributed by DR. FRANCIS ASHLEY FAUGHT, member of an important committee on cancer control.

DR. RUSSELL S. BOLES, an associate in medicine at an eastern university, presents an article condensed from his talk on diet given before the American Hospital Association at its last meeting in Atlantic city.

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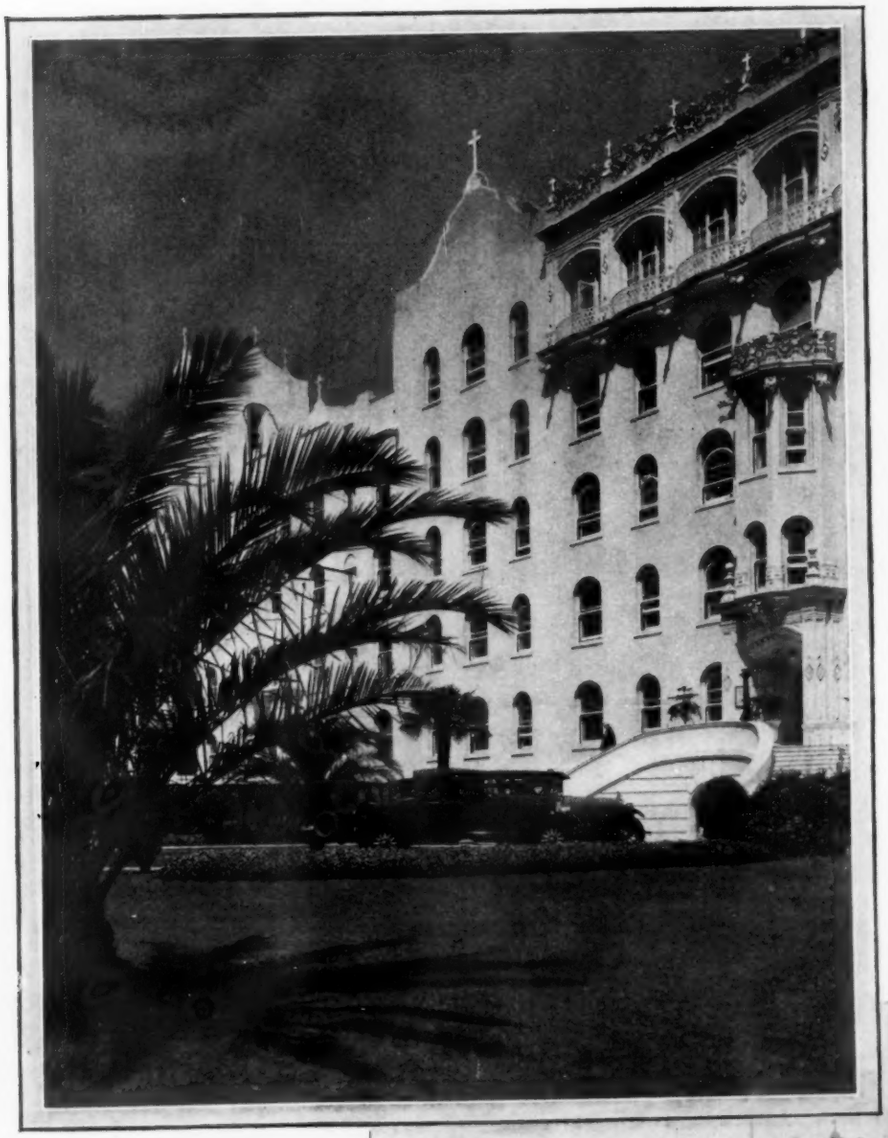


VII. St. Mary's Hospital, San Francisco

TEMPLES OF HEALING

The Abuse of Laxatives

By John O. Bower

Foreword

FOUR hundred years before the time of Christ, Hippocrates, the father of medicine, wrote: "In Sharpe Diseases, and in their Beginning we ought seldom to use a purging medicine: Neither must it be done without great advice and judgment."

Again: "Things evacuated and purged are not to be estimated by the multitude, but advisedly to be considered if those things be avoided and sent forth which should and ought to be and if also the Patient do easily endure it. Also when it is needful we must evacuate even to souning (swooning) and fainting of life, if the Patient be able to endure it."

Twenty-three hundred years have elapsed since Hippocrates wrote what we call his aphorisms, the first records of accurate observations and sensible deductions made by a practitioner of medicine. Numerous translations assuring their perpetuation is evidence of their value. Hippocrates knew nothing about experimental medicine but he knew a great deal about the limited number of drugs at his disposal.

Included in the list of laxatives and purgatives which he prescribed were colocynth and elaterium, drugs not infrequently used today. He knew their limitations and when he advised against the use of purges in sharp diseases he unquestionably was thinking of conditions that come on suddenly and are associated with agonizing pain, catastrophes of the abdomen which we now know as appendicitis, pancreatitis, gallstone disease and perforations of organs such as the duodenum and stomach. Hippocrates did not know them as such but he had undoubtedly seen his patients die from them and that accounted for the second aphorism in which he stated that "things evacuated and purged are not to be estimated by the multitude." Patients had come to him with acute abdominal pain who had taken purges and he had seen them die just as they do today.

In Hippocrates' time they took purges because they had little else in the way of medicine to take; today we take laxatives because we, as a race, are lazy physically. As physical effort has decreased, the use of physics has increased. Much has been written about their use, little about their abuse. This communication has to do with the abuse of laxatives and the consequent effect on the abdomen and its contents.

IN THE United States in 1926 about 11,680 persons died because they took or were given laxatives in the presence of acute abdominal pain caused by an inflamed appendix. Statisticians value each human life at $5,000. Laxatives therefore cost the United States about $58,000,000 in 1926. But this estimate is conservative because other acute conditions of the abdomen are ushered in by abdominal pain and in such cases the giving of laxatives is hazardous and frequently disastrous. Among these are acute perforation of the stomach or duodenum, intestinal obstruction, acute pancreatitis and acute salpingitis.

The majority of persons who have a stomach ache attribute the pain to something they have eaten; they think that if they can get rid of this something the pain will disappear. Their reasoning is at fault. Pain anywhere at any time is a warning. Pain is to the body what the red light is to traffic. To give laxatives in the presence of abdominal pain is to go full speed ahead with the red against you—both mean catastrophe. Undertake no treatment but call your physician; a correct diagnosis can best be made when the symptoms begin. Take nothing by mouth; most mistakes in diagnosis are made because the patient has taken something before he is seen by the family physician.

Laxatives endanger lives because they increase the movements of the intestine. Quietude is essential because it prevents a spreading of the infection. Nature aids this process by making the abdominal muscles rigid and limiting the excursions of the diaphragm. Frequently mothers and other members of the family insist on giving baking soda, essence of peppermint or ginger, syrup of rhubarb or ipecac to the person in pain; any one of these is harmful, because it increases peristalsis although to a somewhat less degree than do laxatives. Frequently these drugs or even water induce reverse peristalsis or vomiting, the patient thereby being saved by a protective reflex mechanism from active forward peristalsis or purgation.

Laxatives do harm because of the increased movements of the intestines. These movements may do two things: (1) cause a rupture of a distended appendix, or (2) spread the contents of the bowel or the products of inflammation, resulting in a general peritonitis. General peritonitis is responsible for 88 per cent of the deaths in appendicitis. In other words, if you have taken a laxative in the presence of abdom-

inal pain and you develop a general peritonitis, you have less than one chance in seven for recovery. Fortunately a fair percentage of patients with abdominal pain do not have appendicitis and a greater number do not have distended appendixes but this one fact stands out: in abdominal conditions associated with acute pain from any causes, laxatives are not indicated until a diagnosis has been made.

The average person who reads the word peritonitis does not fully appreciate what it means. The peritoneum is a membrane composed of a single layer of cells lying on a thin sheet of tissue, thinner than the membrane lining an egg-shell and very much more delicate. It covers the entire inner wall of the abdomen, envelops the stomach, intestines, spleen, liver and pancreas and part of the pelvic organs. Its area is practically the same as the skin surface of the body—a little less in man, a little more in woman, approximately 17,000 square centimeters.

In many respects this thin membrane is to the organs mentioned what the skin is to the body, from the standpoint of infection. When both are intact, they protect the vital centers from infections; when diseased or destroyed, the result is commensurate with the extent of the involvement. It has been estimated that a person cannot live who has more than one third of his skin surface destroyed by a burn. While we do not know definitely the exact area of peritoneum which may be affected before death occurs, we do know that in very severe infections an area much less than that mentioned for the skin surface has proved fatal. In both instances the patient dies of poisoning; in the case of the burn the kidneys cannot throw off poisons with sufficient rapidity and the vital centers cease to function; in the case of peritonitis the protective layer of cells is destroyed and the poison enters the blood in an overwhelming amount affecting the heart and the brain.

Peritonitis may be caused by a number of micro-organisms just as are infections on the surface of the body; there is therefore no specific antitoxin. The most efficient treatment has for its basis a limiting of the amount of the poisons absorbed and the giving of nourishing fluids without disturbing the quietude of the abdominal contents—that is, without producing peristalsis. This explains why the surgeon or attending physician after an abdominal operation gives fluid by placing a needle beneath the skin or into a vein. If given by mouth, even the slightest amount may at times excite the intestines to acitvity. One of the principal functions of the intestine is to propel its contents forward. This is accomplished by two main movements; one in the direction of the long axis of the bowel much like the movements of the garden worm, and the other a contracting and relaxing, circular movement like the contraction and dilatation of the pupil. These movements are controlled for the most part by a nervous system which acts independently of our main nervous system, but is connected with it; up to a certain point it acts automatically,

The action may be compared to that of a telephone system. The central station, or ganglion, is composed of cells that receive and send out impulses over wires (nerves) to the intestines, thus governing their movements. As long as the contents of the abdomen are normal this control acts normally but just as soon as any part becomes diseased there is a change in the movements of the intestines as a result of the changes in impulses or messages received in the ganglion. In chronic conditions, which affect the contents, the changes in the movements are not marked because the impulses are only slightly changed, but when an acute condition develops in the abdomen the warning sent to the ganglion is imperative and peristalsis, or movements of the intestine, are stopped. Nature does all in her power to protect the body from infection.

Taking the Ax Out of Laxatives

Nine thousand persons were murdered in the United States in 1928.

During the same year, almost 12,000 died because they were given or took laxatives in the presence of abdominal pain.

Pain warns but it also protects; it is to the body what the red light is to traffic. Abdominal pain means do nothing until you have consulted a physician—do not give castor oil, calomel, citrate of magnesia, epsom or rochelle salt, or any other laxatives before calling a physician. Printed on the labels of the foregoing should be the words "to be taken only in the absence of abdominal pain."

Do not attempt to diagnose; even a physician may make mistakes and he frequently does so because of what you have done before he arrives.

At the present time we are continuously and advisedly warned about the increase in deaths from cancer, but four times as many persons die from appendicitis as from cancer during the productive period of their lives—before the age of 50.

Judicious advertising regarding the use and abuse of laxatives will save hundreds of lives and they will be saved when they mean most to their family, the community and the nation.

Do your bit. Tell your husband or wife. Warn your friends or neighbor. Ask your druggist to post a warning. Arrange for your family physician to speak before your community clubs. *Save a Life.*

This protective mechanism is so developed that when a leak occurs in the intestinal tract (that is, perforation of stomach or duodenum) and something is given by mouth it will invariably be immediately vomited; this also happens though less frequently with inflammation of the appendix. In addition to the cessation of peristalsis the intercostal nerves are called into play and the abdominal muscles contract, the action of both preventing a spread of inflammation by stopping the action of the abdominal contents.

All this happens the instant you first experience pain. Nature protects you immediately by stopping peristalsis and then warns you by inducing pain. The "exchange" in the abdomen acts automatically then "plugs" in the higher centers and warns you. Then what do you do? You either call a physician or you take something by mouth. If you take a laxative, in the majority of instances you sever the connection between the higher nerve centers and the automatic control. You do it because you have not been informed that it is dangerous.

You now know and you should realize that when any one dies from appendicitis some one is to blame.

When Their Mother Is Away

THIS brief sketch is not intended for the eyes of mothers or baby specialists or any one interested in the scientific upbringing of children. It is written solely for those obliging grandmothers and aunts who take care of their brothers' and sisters' and sons' and daughters' families while the mothers are ill or away on vacations. It suggests a few secret practices which, on such occasions, have helped to keep the peace in mother's absence, and it is hoped they may help to bolster some other obliging relatives who are experiencing that peculiar, helpless, gone feeling one sometimes has when left alone with from one to half a dozen comparatively strange children belonging to some one else. These methods are entirely unscientific and guaranteed to spoil any child if applied for more than two or three weeks a year.

Meals are likely to be the biggest bugbear, and of these breakfast is usually the worst. The mothers I know always leave such appalling directions. Last summer I took care of a four-year-old cousin for a month. Her mother wrote, "Mary always has a dish of cooked cereal for breakfast and she must drink a quart of milk a day." Now I do not know whether Mary, at home always *eats* the cereal she always *has*, or not, but at my house, the very first morning, Mary announced quite firmly, "I don't care for oatmeal very much and I don't like milk and I'm not hungry."

Panic almost seized me, but a sudden inspiration saved the day. "Just wait until you see *my* oatmeal," I exclaimed, with much more assurance than I felt. On my cupboard shelf I had noticed a package of pink "sugar sand," which I had purchased at some time or other because it was pretty. I sprinkled this fairly liberally over Mary's serving of oatmeal. When she saw it, her face became illuminated. "Pink oatmeal!" she exclaimed rapturously.

Then there is always that milk! I want the children to keep well and perhaps gain a pound or two under my amateur tutelage, but a quart a day is such a lot when it isn't popular. Little Bobby, 8 years old, was with me for his mother's vacation recently, and he refused his milk absolutely. I chanced to see at the grocer's a small package containing five or six tiny bottles of assorted flavorings—lemon, orange, vanilla and almond. I presented this to Bobby and asked if he would like to learn to make egg-nog. He was delighted, and was soon absorbed in the happy task of "egg-beating." We tried first one flavor, then another, then combinations. Bob made egg-nogs for himself and for all his playmates. He consumed milk in such quantities I had to limit him to a quart a day for himself and another quart for the neighbors!

Next to meals comes the problem of keeping these temporary charges amused. I have a sandpile and a swing in my yard, and no mother need ask me to come to her house to care for young children unless she furnishes these two essentials. In one of my closets I keep two large boxes. Into one of these, all year long, go all sorts of odds and ends that appeal to youngsters—magazines, pictures, sewing materials, paste, paint, brushes, dishes, games, tissue and crape paper, old books, fancy favors from bridge parties, old alarm clocks, tools. The list is endless. When children come, it is a never-failing source of fun. Into the other box go old clothes for "dressing up."

If the children are old enough, we always plan a party while mother is away. We start talking about it the first day and think of as many things as possible that the children themselves can make. First there are invitations to be written, perhaps painted. Nut dishes, place cards and favors are planned, and the youngsters are busy making them during their leisure time for several days. Anticipation of fun to come and plenty of things to do keep their thoughts from homesick meditations.

JEAN HAVEN.

When Johnny Doesn't Eat

"MY JOHNNY doesn't eat. What shall I do? How can I make him eat?" These are questions that are frequently asked by mothers all over the world. There appears to be an idea that there is some magic formula to make Johnny want to eat. Unfortunately this is not true.

Johnny is a little animal who was born with an instinct that makes him desire the satisfaction of his bodily needs. He has the urge of hunger, the biologic desire for replenishing body tissues. When Johnny eats, how he eats, where he eats and what he eats, however, are not matters of instinct but are matters of training. Eating habits, good or bad, begin at birth; and Johnny at the age of 5 years or more possesses feeding habits that are the results of his early training. Most of his troubles with poor appetite, capricious taste, and the vomiting of foods are due to difficulties that are not inherent in the child but are the outgrowth of faulty home training. Hunger is instinctive; appetite is an acquired regulation of hunger.

Johnny doesn't eat and mother worries about it, forgetting that Johnny is not likely to starve himself. Mother has ideas of what and how much he should eat but Johnny disagrees with her. The child recognizes the power that he possesses over the comfort and happiness of his mother. Mother may feed, force, cajole, scold or spank but none of these means produce appetite. The mother makes Johnny feel as if he were doing her a favor by eating and, in consequence, every meal becomes a game or a battle for mother's satisfaction.

"Take just one more prune, Johnny, to make the dog happy."

Hunger Needs Encouragement

Children do not eat to order. Hunger needs encouragement and development. Every child needs to develop an appetite from joyous play, from active exercise, from adequate rest, from sunlight stimulation and even from having the right kind of food prepared in an appetizing manner.

Johnny may eat more readily when kind words are applied to him than when he is nagged or lashed with harsh criticisms. It is a wise policy to stress the foods that he does eat and may eat rather than to harp on the foods that he doesn't want to eat, that he doesn't like, that he doesn't care about. The difficulty in this country is that there are too many kinds of food available and parents expect and often demand that children enjoy eating all of them. There is no reason why children should not have the privilege of disliking some foods. It is a good plan in fact to center the child's attention upon one or two foods that he never need eat. Personal taste and preference merit some consideration. Forcing foods discourages appetite.

Some Johnnies do not eat because they are being given too much milk. While milk is a good food, when the teeth, particularly the second teeth, begin to erupt, there is good reason to reduce the daily amount of milk. A child can become anemic when too much milk is taken to the exclusion of other foods richer in iron. Why make a child drink a quart of milk if it helps to destroy appetite? Any intelligent mother can provide her child with an adequate

By Ira S. Wile

Johnny may be kept waiting for a meal until sleepiness interferes with his appetite.

amount of this valuable food in the form of cream soups, cream sauces, milk over cereals, even milk in ice cream.

Some children actually eat inadequately because too much emphasis is placed on water drinking. A glass or two of water before meals hampers some children. With their stomachs more or less loaded with water there is insufficient room for solid foods.

Coaxing Destroys His Interest in Food

Many a Johnny is disgusted with eating because of the constant fuss that is being made over a special vegetable or fruit or some additional item of food that he is called upon to eat. There is begging, pleading, persuasion, a discourse on how good it is, why he needs it, how much it will do for him, a request to take one more teaspoonful for Grandma, to take just one prune to make the dog happy, and the like. This form of table talk does not encourage Johnny in the slightest. It merely makes eating an unpleasant affair and it discourages the interest that most normal children have in the daily dietary.

Suppose a child does not eat some pet food of the parent. The chances are that in early childhood the parent may not have cared much for that or some other particular food. Allow Johnny to have some freedom in selection from the things that the table affords and he is more likely to find adventure in eating.

Perhaps Johnny is suffering from poor habits. He has eaten at irregular hours; he has eaten too much between meals; he has filled himself with sweets just prior to meal time; he has been kept up at irregular hours because father wants him at the table. Indeed, he may even be kept waiting for a meal until actual sleepiness interferes with his appetite. Possibly Johnny doesn't eat because the whole house is not organized with regularity. Meals at different hours may conduce to natural living while camping but they do not produce regularity in the development of an appetite under average home conditions.

Perhaps Johnny doesn't eat because the family makes too much of foods. They are oversolicitous. They try to make him eat what mother likes or what father thinks is best even though father may not eat it himself. There may be overpressure to eat specific foods that are served so frequently as to become monotonous, as during the present overstressed enthusiasm for vitamins from carrots and spinach. There should be less talk about foods and better parental example in the matter of eating. A wide dietary takes care of most of children's actual chemical needs. There should be no games to induce eating, but eating itself should become a game in which the entire family finds cheerfulness. Instead of discussing foods at the table, it is preferable to talk about the joyous things of life, to exchange happy experiences of the day and to dwell on things that divert the mind from the particular foods that are on the table. Discipline can be enforced in the guise of suggestion.

Some children are finicky in their tastes. They do not eat this and they do not eat that and it is said that they will not eat the other thing. This, of course, represents for the most part errors in training. Possibly adult members of the family have set poor eating patterns and children are imitating them. After all childhood is a period during which children learn about foods, and their food behavior arises mainly from their experience in the home. With pleasure at the table, a genial spirit of comradeship, with diminished emphasis upon dietetic vagaries, finicky tastes are likely to diminish and there is greater willingness to participate in the regular dietary of the home.

Should Be Served Small Portions

At times Johnny doesn't eat simply because he is tired. Children are not equal in their ability to endure exertions. Some children quickly become pale, appear tired and drowsy and care little about eating. For such children a rest between meals may conduce to better appetite. For small eaters or tired children smaller portions of food on the plate often lead to its being eaten and encourage a second helping when the packed plate discourages eating effort. The idea of no waste is important, but it should not be enforced by converting a satisfied child into a receptacle for food he does not wish.

Perhaps the appetite is discouraged by a sense of hurry, by tensions, by urgings, by the nervous manifestations of those at the table. Possibly Johnny will eat quietly and adequately when alone or will enjoy an occasional meal with the stimulation of his appetite at the home of a relative or friend. There is no harm indeed if occasionally Johnny doesn't eat at all. The rest will do his stomach no harm. Missing an occasional meal does not cause emaciation or lead to physical deterioration. To eat when one is hungry is important; to have adequate food within each twenty-four hours and sufficient food for the week and month are more important than what a child eats at any single meal.

There is no reason why children should not have the privilege of disliking some foods.

Perhaps Johnny does not eat because he is emotionally distressed. He may be disturbed by little worries that he has not revealed. He may be reacting to fears of various kinds that are undermining his sense of well being. Occasionally anger will carry over for several days and sulkiness may be responsible for a lack of interest in foods. Disappointments, anxieties, sorrow and even love may definitely affect the eating interest of children between the ages of 5 and 12 years. Special emotional upsets are to be distinguished from general nervousness that arises from illness. Worry over examinations or school marks, for example, fears over little wrongs that have been committed, distresses at unpleasant circumstances in the home have profound effects on children and lead to diminished appetite.

If Johnny has been eating well and then suddenly begins to lose interest, it is possible that he is beginning to feel the effects of approaching illness. Under such circumstances medical advice is highly desirable. Constipation occasionally, but only occasionally, is responsible for lack of appetite. Merely to give a child a pill or an enema for the relief of constipation with the idea that it will improve his appetite is an incorrect and undesirable procedure. Intelligent advice is preferable to the assumption that constipation is responsible for lost appetite.

Finally, there are the Johnnies who desire attention, who love to occupy the limelight, who wish to hold the center of the family stage. They have the habit of dawdling at meals; they have been allowed to eat for a long period; their parents have given in to their whims and their fancies. They are children who create many difficult situations in the home, who annoy, in every respect, who are petted and spoiled and use eating itself as a means of tyrannizing over the home, of securing bribes to eat and of securing rewards for partaking of special articles of food. This type of Johnny requires careful reeducation, but his parents require it even more.

The answer then to the question of why Johnny doesn't eat is by no means simple. It involves the question of Johnny's nutrition, his general health and the habits that he has acquired. It calls for an investigation of his adjustments in the home, at school and in life. It requires thought as to his activity, his rest and his social life, but it also demands an investigation of the family home, the family table and the family relationships. Too often parents wait until harm has resulted before taking action.

If Johnny doesn't eat there is a fault somewhere and a reason for his behavior. It may be due to troublesome tonsils, decayed teeth or some state of physical disease; it is more likely to be of psychical origin. One should not be quick to place the blame on him, for it may lie elsewhere. Johnny's vitality and vigor may not receive its finest expression in appetite because the place in which he lives and the conditions under which he lives may not be provocative of appetite.

The Bird with a White Breast

By W. W. Bauer

The bird with the white breast was in evidence when Elizabeth Oxenham died.

IN A BOOK of epitaphs among other interesting tributes to or comments upon the departed, I saw not so long ago the following inscription taken from a gravestone at Stepney near Exeter, England, and dated 1683:

> Here lies John Oxenham, a goodly young man, in whose chamber, as he was struggling with the pangs of death, a bird with a White Breast was seen fluttering about his bed, and so vanished.
>
> Here lies Mary Oxenham, sister of the above John, who died the next day, and the same apparition was in the room.
>
> Here lies, hard by, James Oxenham, the son of the said John, who died a child in his cradle, a little after, and such a bird was seen fluttering about his head a little before he expired, which vanished afterward.
>
> Here lies Elizabeth Oxenham, the mother of the said John, who died 16 years since, when such a bird, with a White Breast, was seen about her bed before her death.

Here is mute evidence of a family tragedy almost two and one-half centuries old, graven in cold stone yet warm with the ever poignant appeal of human life and death. A little mystic and eerie, this strange bird with the White Breast. What messenger of death is this, fluttering about this family and taking, look you, the young and the goodly? They had strange ideas in those days!

It will be noted that Elizabeth Oxenham, mother of John, died sixteen years "since," and the bird with the White Breast was in evidence at her death. By inference, the reappearance of the mysterious visitor at the deathbeds of her son, daughter and little grandchild indicates a connection between these deaths so many years apart. The first thought is that this sinister white-breasted bird must be an illusion, but it may equally well be conceived as a fanciful way of expressing a similarity that had been noted in the manner of these deaths. In fact, it must be so taken, for illusions of that sort would scarcely appear four times, persisting over a period of sixteen years. Perhaps, after all, their ideas were not so queer.

It is not a difficult matter today to find hard scientific facts that fit with almost uncanny accuracy the fanciful conception expressed in these epitaphs. There is a disease—but let us fit it to the story of the bird with the White Breast.

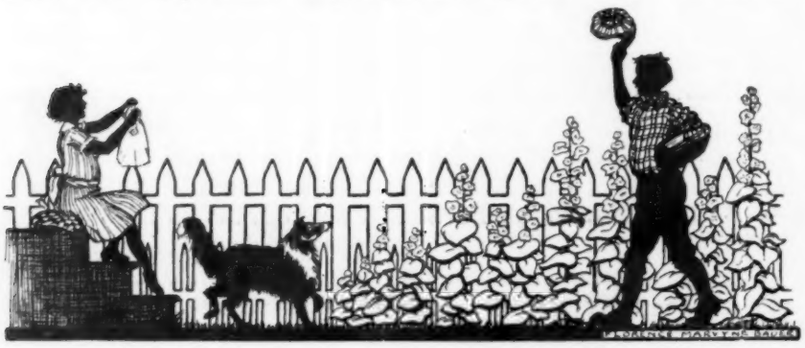
Elizabeth Oxenham died, and the bird was seen about her bed before her death. She had

two children, perhaps more, but two at least—John and Mary. We do not know how old they were when she died, but they must have been young, for sixteen years later John could still be described as "a goodly young man." They must have been too young to care for themselves when their mother died, and so she must have been young too when she left them partially orphaned.

The same story is enacted today over and over again, less frequently than in those days but still far too often. The same disease that fits these epitaphs so well is still taking the lives of young mothers and leaving children half orphaned—or wholly so, for it takes young fathers too, though less often.

And then sixteen years passed, during which the bird of ill omen seemed not to have haunted this family. But when he does flutter back into the picture, he visits twice in quick succession, one day after the other. First John Oxenham, Elizabeth's son, now a "goodly young man." How much those three words convey! We can see these goodly young men about us today, working at their daily tasks, returning at night to modest homes where young wives sing about their work because of the baby who sleeps within or is soon to come, planning their conquests of tomorrow's problems, dreaming their dreams.

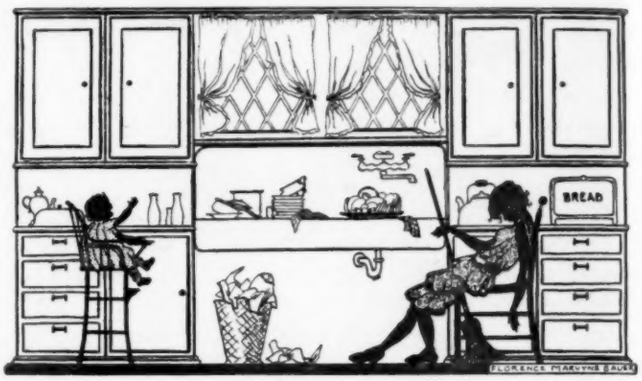
Two hundred and fifty years have changed the externals of the picture; the young men, their wives and their problems are not the same, but the air castles and the dreams are made of the same stuff. And all too often, the same sinister bird with the White Breast flutters one day into their lives and ultimately about their beds and they come to premature death. For



These goodly young men are about us today, returning at night to their modest homes where young wives sing about their work.

this grim bird is not a shadow, not an illusion, not a fancy of a romantic age; it is a living menace which has stalked down the ages destroying the young and the goodly without mercy or discrimination, cutting off the thread of life before its pattern is well begun, leaving broken homes and orphans behind. The bird vanishes, so the epitaph tells us—but he comes back.

And so we come to Mary. The inscriptions say that she was John's sister and that the same apparition was in the room. With so little information, we may be pardoned for letting our imaginations wander a little. Mary was probably young. Her name proves that she was as yet unmarried, but we may suppose that possi-



There are danger signals—that tired feeling, loss of weight, slight cough, susceptibility to colds, indigestion.

bly she had some plans of her own in that respect. Whatever they may have been, the bird with the White Breast seems to have settled them. The same bird is still frustrating the plans and the ambitions and thwarting the dreams of the young women of today. In fact, young women are more frequently the victims of this insidious disease than men. Mary's case, sad as it is, might have been worse. She might have had to bid farewell to a husband and young children, as her mother had to do, and as many young women are having to do today, two and a half centuries later.

That leaves James, the son of John, who died, we are told, a child in his cradle. The fateful bird was there, fluttering, and this time it seemed to be hovering particularly about the head. And still the epitaph fits the picture that you and I may see, if we will but observe. Little children in their cradles are still following or preceding their young fathers and mothers to the grave with the same disease, which in these little ones attacks the brain and its coverings. James' life was so brief that he has no story even to imagine. Who knows what it might have been if he had lived? Who knows what promise of greatness in infants of today, dying from this same scourge, remains forever unfulfilled!

Can this white-breasted bird be only symbolism? Was it but the word-imagery of a romantic period when extravagance of expression was the rule? Was it the outgrowth of deeply rooted superstition which seized upon these deaths all in one family to perpetuate, perhaps, a legend of persecution grown up who knows where or how? Or did these people

know or suspect that behind these deaths lay one common cause? We are prone to think ourselves wiser than our ancestors, when in truth we often fail to extract from a given amount of data as much information as they did, despite our vastly improved facilities for observation and experimentation. The more we study this inscription, the less justified we feel in our first conclusion that they had queer ideas in those days.

Bird Hovers over Modern Homes

We can, if we will but look about us, see the visitations of the bird with the White Breast still going on. They seem to run through families, as in the case of the Oxenhams. For a long time this was ascribed to heredity but has now been shown to be due to the contagious nature of the disease. Much has been learned about this shadowy visitor. It is an infection due to a specific micro-organism which has been identified and studied and which can be found in the tissues of its victims. It is acquired through contact with those who have it or may be transmitted through milk or meat. It is usually acquired in childhood, often lying latent—the bird vanished but it returned—until adolescence or young adult life before manifesting itself actively.

When it reappears, it involves various organs, depending somewhat upon the age of the patient. In children usually the bones and the glands are affected, while in young adults the lungs suffer most, but the intestinal tract may also be involved. It may, as in little baby James Oxenham, flame into immediate activity, attacking the brain and its coverings. No organ or part of the body is entirely safe.

This condition was regarded for years as one in which death inevitably occurred once the disease had obtained a foothold. This has been shown to be untrue; in fact, recovery is more common than death when proper care is instituted in time, which is early in the course of the disease. But as time passes and the infection grows more firmly entrenched, recovery grows increasingly difficult and infrequent. There is no cure for this disease except a careful regimen of life.

Growing knowledge of the nature of the disease, plus a conviction that the human race could not afford to accept supinely the ravages of a scourge which showed signs of being conquerable if vigorously attacked, brought into being organized efforts toward control. Even before this, there had been a gradual decline between the time of the Oxenham inscriptions here quoted and the early years of the twentieth century, but this had been slow, altogether too slow to be satisfactory. It appeared to be due, at least in the opinion of some observers, to the gradually rising economic level of the common people, the greater diffusion and more equable distribution of wealth, and the consequent rise in standards of living which included every year a greater number of people.

This factor, of course, is still operative. Yet it would seem that the organized efforts against the disease must have had some influence in accelerating the decline in deaths, which has been marked in the last twenty years, during which time the rate has been reduced on an average of 40 per cent in the United States. Whether economic progress or educational campaigns conducted against the disease have been mainly responsible is neither here nor there; the fact remains that the 40 per cent reduction has been made. Some point with pride at this achievement, and pardonably so; others suggest that 40 subtracted from 100 leaves 60, and that more remains to be done than has thus far been accomplished. A forward-looking attitude certainly demands that we consider what remains to do rather than glorify what has already been done. We have, in other words, only begun the war upon the bird with the White Breast.

Message Must Be Carried to Public

The weapons in this war have been two: increasing medical knowledge and publicity. Each is helpless without the other. The historic episode of Trudeau's retirement into the wilderness to wrestle alone with the sinister foe, his triumphant return to prove that the enemy is conquerable, the first little cottage by the shore of Saranac Lake, the monumental institution which has grown out of that cottage, the final triumph of the disease over Trudeau, or perhaps we had better say his self-sacrifice in his ardor for the salvation of others—what of all these, if the world knows nothing of them?

Or a new cure is offered! That has happened many times, and each time the hope has been false. Some of these have been inspired by honest but mistaken enthusiasm; occasionally a scientist has been betrayed by premature publication of experiments which ultimately failed; others have been shameful schemes to trade upon the misfortune and the ignorance of the sick and the dying for the profit of unscrupulous rascals. All of these unfortunately may result in leaving the patient, his resources dissi-

pated by false hopes, to die in poverty and need.

How is the word to be spread that there is but one "cure," and that a long and tedious and laborious struggle, by means of rest and carefully supervised control of living, to rebuild the defenses of the body? Publicity is the only possible answer.

The campaign has borrowed the armament of the advertising fraternity, employing billboards, radio, magazines, newspapers, dodgers, pamphlets, direct mail, word of mouth, even the theater, to carry the message of hope. But there remain remote fastnesses that seem not to have been reached; barriers of foreign language, racial custom or hostility, illiteracy, indifference, obstinacy, and prejudice that have not been broken down. Until they are, the sinister bird will continue to hover about American homes, fluttering, waiting—and striking! No home will be safe until all homes are safe.

Good Health Is Best Defense

Not cure alone must be the objective; a greater one is prevention, because this is not only easier than cure but far, far cheaper. Good health has been found to be the best defense against this ancient enemy of humanity, who has been dubbed "captain of the men of death." Though he has fallen from first place to fifth or sixth, he still leads as a destroyer of young men and women. Prevention is the security for which we must strive. The means of prevention being good health, it follows that hygiene of daily life is an important consideration. Too great a strain upon vitality, from whatever cause, must be avoided. Such causes include the unwise dieting of modern young women for the sake of having a fashionable if not a graceful figure; the efforts of young wives, even while awaiting motherhood, to add to family incomes for necessities or luxuries; the failure to remedy conditions of ill health which begin as slight annoyances and progress to disabling weaknesses which allow invasion by this insidious disease; and, above all, the failure to have an annual inventory of health. Early discovery means early recovery; frequent examination is the only means of assuring early discovery.

There are danger signals, to be sure. That tired feeling, loss of weight, slight cough, inconsequential but persistent susceptibility to colds, slight indigestion—they may not be warnings of the proximity of the White-Breasted destroyer, but it is worth while to find out.

The Mysterious Bird Is Unmasked

Do you sense a vague familiarity about some of the phrases in the last few paragraphs? Do they touch evanescent memories of something you have read or seen before? Indeed, you have, for these and similar epigrammatic truths have been broadcast over the communities for twenty years through the medium of a great national organization of fighters banded together and appealing for your help and mine, day by day and week by week, to conquer this hovering threat against the safety of our homes. This organization challenges us to look to our own safety by accepting the means of prevention and cure and applying them to our own personal and family situations. It summons us to battle against the ignorance and the mistakes that still permit this messenger of death to pounce upon his victims. Only thus will it be possible to banish this bird with the White Breast, this bre[illegible] homes, this blaster of youthful hopes and aspirations, destroyer of young fathers and mothers, maker of orphans, waster of resources, scourge of the poor, this White Plague—Tuberculosis!

THE POTTER

Surgeon,
Deft and knowing,
Hands like yours, with human
Clay, remold the broken patterns
Of God.

GARDNER WADE EARLE.

AN EXPERIMENT IN Preseason Football Training

By Henry Pleasants, Jr.

IT WAS one of those hot, muggy days in October. In one of its most important games of the season, the football team was not showing up well. As usual, I was on the sidelines in a sort of unofficial capacity as medical adviser. One of my boys was playing end and another was a substitute guard. I have a weakness for school football games; they are the nearest approach to real, honest-to-goodness amateur sport that we have.

The coach walked over to me and stood watching the game. He was restless and worried. "What's the matter with those fellows today?"

I did a little thinking before I replied. I had noticed that the plays were sluggish. There was the "let George do it" spirit in the back field; the off-tackle plays were slipshod, and the offensive was weak and dragging. But I had noticed something else. Nearly every boy looked white and drawn. The game was a hard one, it is true, but that drawn look does not come from hard games; it comes from poor physical condition.

"How long have you been practicing?" I asked.

"Well, we were a little late in getting started this year. School opened the last week in September. I sent out notices to the squad that practice would begin on the twentieth, but only about a dozen showed up. The rest of the fellows were still away with their families. We've had only about two weeks of real practice."

Late Hours and Rich Food to Blame

"I think your trouble is physical condition," I said. "These boys are the sons of prominent people who spend their summers in fashionable resorts where the younger crowd has a fairly lively time dancing and staying up late at nights and eating anything and everything. Even the boys who are at summer camps spend two or three weeks with their families before school opens. I should like to take this crowd to the Maine woods for two weeks next year and see whether we couldn't get them into a little better physical condition before they start the season. We must protect their hearts and lungs. To my mind it is criminal to allow boys to play hard football when they are in such poor shape."

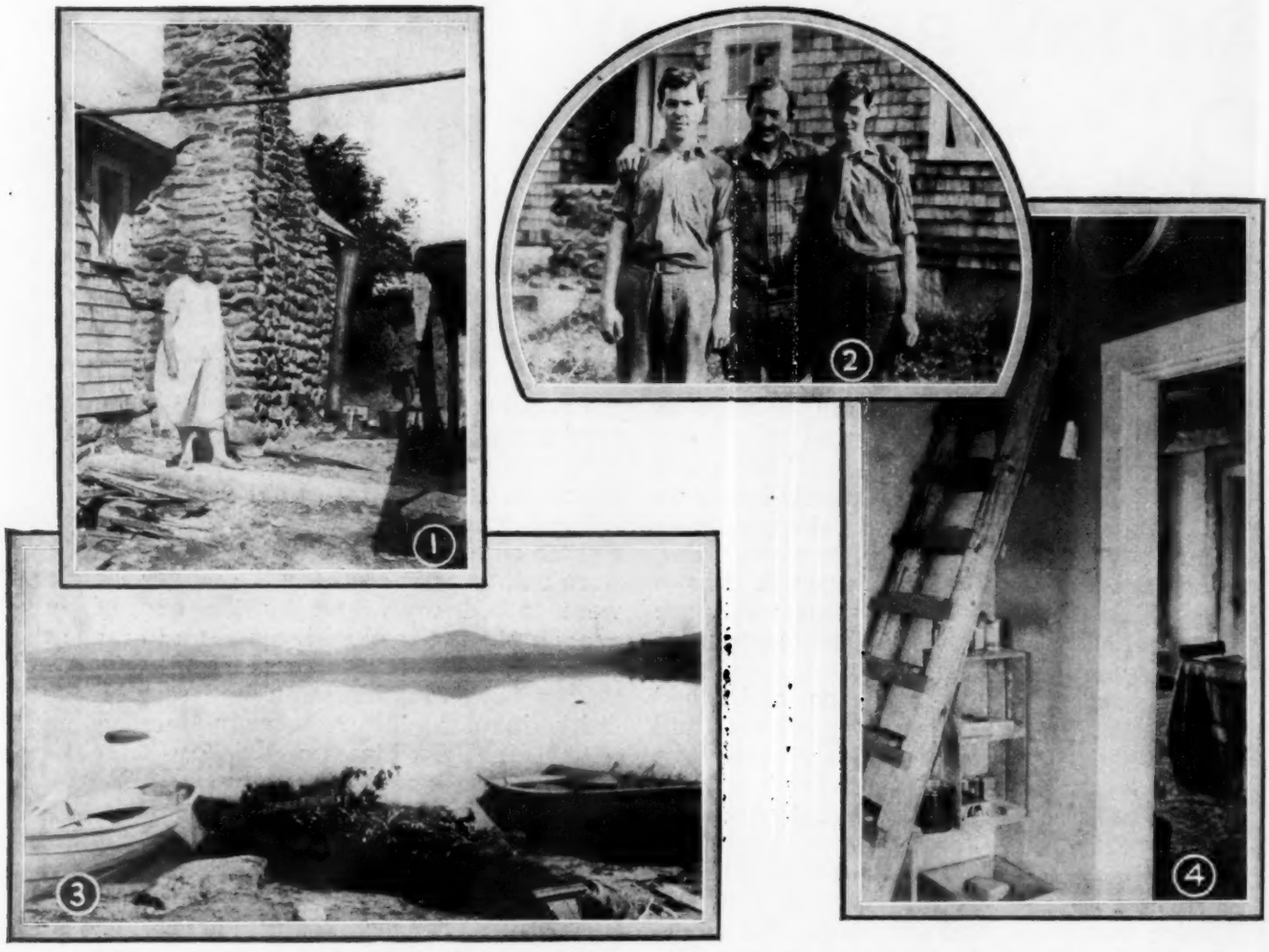
"It would be a wonderful thing if you could," the coach agreed.

Right there the idea was born. The headmaster snapped at the scheme, and the boys were enthusiastic. During the winter the plans were talked over, and by the end of June enough of the squad had signed up to make the plan worth while. The main difficulties were on my side, for the camp had scarcely been finished and the lack of labor in Maine, coupled with the serious illness of my good friend and neighbor in the adjoining camp, made the prospects dark. The state of Maine is not just around the corner from Pennsylvania so arrangements had to be made by letter and by flying trips. By August things began to look propitious. Thirteen boys had signed up, and the coach would be on hand to help out in the management. Extra cots and bedding were shipped up, and a colored cook was engaged.

Last Minute Troubles

At the last minute trouble began. The colored cook could not go. I had some important meetings to attend just prior to the opening of the camp and would not be able to arrive before September 1. The team was expected on the fourth, but some of the men would not come before the sixth. Then word came from the coach that illness in his family might prevent his coming for more than a short stay. Next, word came that the school would open one week earlier than had been anticipated, and there was a grave question as to how many boys would turn up.

In spite of the problems Dick, the captain of of the team, and I landed at the camp on September 1, and proceeded to get things into shape. My old friend Toby, in spite of his infirmities, had had a table built to accommodate fourteen persons, and my good cousins, who had occupied the camp for two weeks, had built a fine outside fireplace and made numerous improvements. I was able to get an excellent cook, one of my neighbors, whom we affectionately called Mother Brown, and all was in readiness.



1. Mother Brown, the camp cook. 2. Dick, Doc and Howie. 3. Just 300 yards from camp. 4. When it rained too hard during practice hour, the squad did calisthenics in the loft.

By the fourth of September the boys began to arrive in groups of two or three. Most of them had camp equipment, and some had had a little experience in camping, but for the most part they were utterly green. The change from summer resort excitements to the quiet of the back woods was pretty radical, and at first there was a little grumbling by one or two men, but a heart to heart talk soon straightened everything out.

Fortunately the location and general conditions were ideal. There was a fine lake within 300 yards of the camp, with fishing and swimming and boating. Near by were excellent level fields for practice, and the nearest town was ten miles distant, thus discouraging much going out at night. The scenery and the wild life in the surrounding country made things interesting even for the city boys, and there were enough camp duties to be done by each man to keep him well occupied.

Immediately upon arrival in camp each man was given a complete physical examination and was weighed stripped. Exercise was graded for those in whom defects were noted but the boys were a pretty healthy lot. Before the camp closed the physical examination was repeated; I shall refer to the results later.

The program of the day began with a 2 mile jog at 7 a. m. This was followed by a short swim in the lake. Breakfast was a massive one, and I know I shall be severely criticized by trainers for it. As a rule it included fresh or stewed fruit; cereal cooked usually over night; bacon or broiled ham and two eggs; fresh biscuits, doughnuts, or corn bread, or occasionally griddle cakes; chocolate, coffee and unlimited milk.

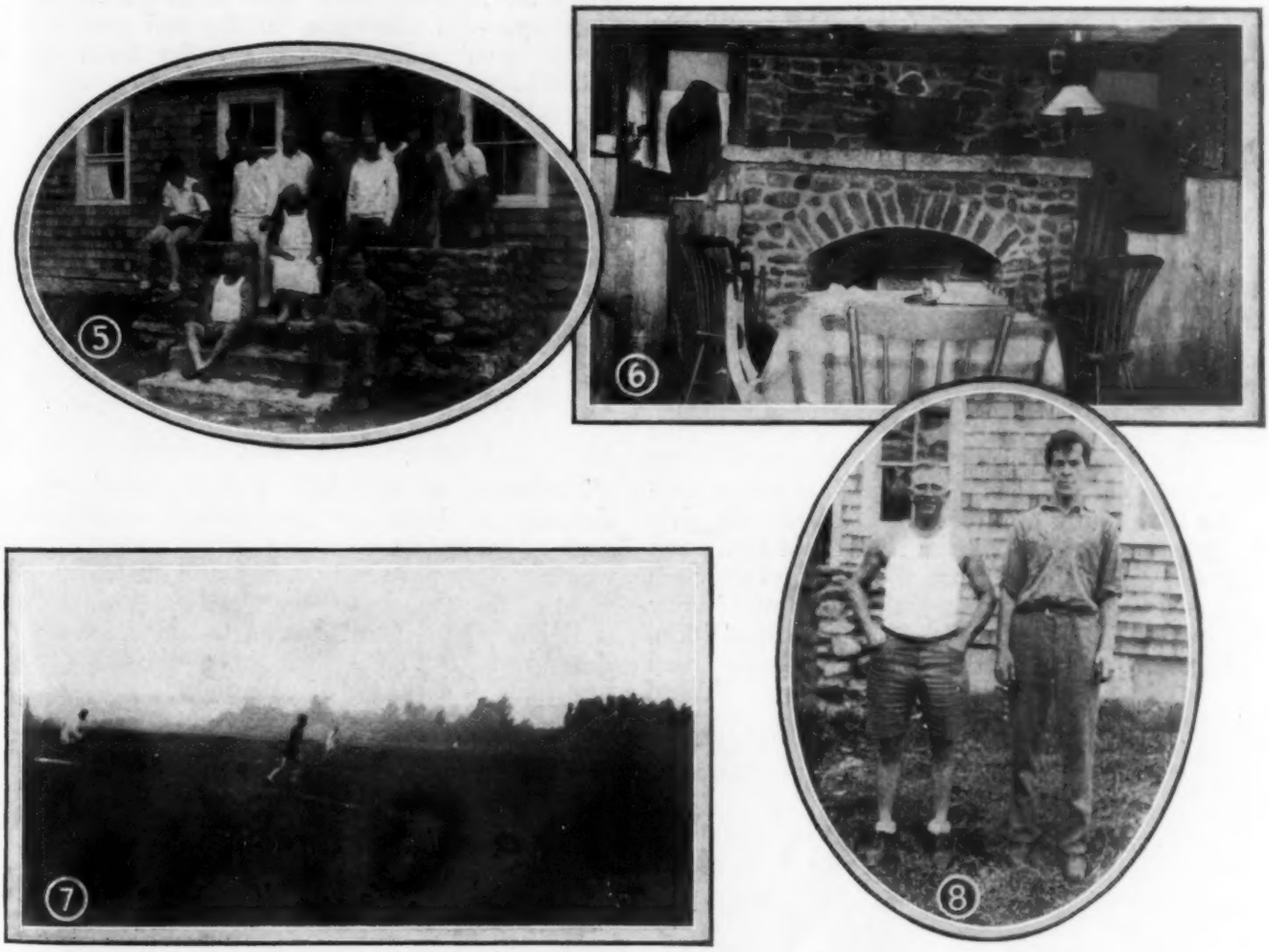
Following breakfast the camp chores were attended to—bunks made and dishes washed—and the rest of the morning was given up to rowing, fishing or swimming.

Lunch was served at 12: 30 and was fairly substantial, consisting of soup, three fresh vegetables, chocolate, milk, bread and butter and cheese, with a pudding for dessert. This was varied from time to time, and occasionally meat was given such as roast beef, corned beef or chicken. Greens were insisted on for each man.

After lunch one solid hour was devoted to absolute rest in bunks. No reading or loud

talking was permitted. Often many of the boys took naps. The next hour or more was devoted to intensive football practice in which running, passing, kicking and falling on the ball were accented. There were no formations or tackling. At the conclusion of the practice there was a brisk jog back to camp, a swim and a rubdown.

The evening meal was simple and wholesome. Meat was seldom given at this meal. Corn meal



5. All hands and the cook. 6. First prize for neatness. 7. Practice in the rain. 8. Coach and captain of the team.

or rice pudding was served as dessert quite often. After the evening meal the boys were at liberty to do as they chose, but trips away from camp were discouraged. Usually they sat in the cabin reading or playing cards and games until 9 o'clock, which was the official hour for retiring.

There were many amusing and almost calamitous experiences in handling this venture. The important thing to be done was to keep the boys well, contented, well fed and busy. For a time it seemed as if everything was conspiring to make trouble. One memorable day the water gave out, the pump got out of order, and the gasoline stove went on a strike. Mother Brown had never cooked over a camp fire and had never before used a gasoline stove, but like the true sport she was she made the best of things and merely moved the tin oven out on the camp range. This appealed to the boys as more in keeping with the outdoor life.

Under instructions from Toby, I climbed down the well in my bathing suit and dissected the pipe joints, climbed out again and threaded an extension on the lower end, then climbed down into the depths and somehow got the pipe in place without getting drowned.

The improvement in the physical condition of the boys began to be noticeable within the first two days. There were the usual sore leg muscles from the morning run and a fairly heavy crop of blisters from ill fitting shoes, but nothing was serious enough to interfere with the regular routine. Each day their wind improved, and as the boys began to see their own improvement there was less desire to leave camp.

There were stringent rules against eating between meals, but it was strange how the day's supply of doughnuts vanished between breakfast and lunch. Mother Brown never informed on any boy, but occasionally her patience would

reach the limit and she would complain that she did not see how she would ever get doughnuts and muffins for supper if those boys "et 'em as fast as she made 'em." It would then be up to me to read the riot act during the next meal, and the crowd would look innocently at me and agree with everything I said. But the results as to the doughnut pile would be about the same next day.

A Problem of Ethics

One problem presented itself which may or may not have been handled according to Hoyle, and I may be criticized severely for it. One evening I discovered a game of penny-ante poker in full bloom at the table in the living room. There was no attempt at concealment, and the boys were having a royal time. All that I asked was whether the stakes were high and, finding that they were not and being assured that the players were allowed to play by their parents, I let the matter ride.

In discussing the problem with the coach, who was a bit horrified at the idea, I merely stated my grounds by saying that I would a darn sight rather have the boys lose fifty or seventy-five cents in a quiet poker game in camp than be wandering around some town eating and drinking a lot of junk and meeting questionable girls at the dance halls. It was a safe bet that each boy would spend three or four dollars on each trip to town, and from a training point of view he would be in a much worse condition. Besides, if the boys wanted to play poker they would certainly do it somewhere else behind my back.

Another feature of this experiment was most interesting from a psychological standpoint. Within about four days an esprit de corps began to be manifest. The boys pulled together as a body. They snapped into their run in the morning and into their practice in the afternoon with a verve that I had never seen before. Friendships sprang up between boys who had gone to school together and been on good terms but who had not really known each other before.

There was no attempt to stimulate any particular football spirit during the camp. It was not our idea to make a sort of rah-rah-our-team-must-win-orgy out of our training program. The captain and the coach studied out the possibilities of each man for a certain position, and on the practice field the men were given ample opportunity to show their merits. Many of the boys who came to the camp were unquestionably second string men, and knew it, but their faithful work and loyal enthusiasm were splendid examples to the old guard of "letter men" whose place on the team was assured.

One or two new candidates came to the camp, and the way in which they threw themselves into the spirit of the team was highly encouraging. In previous years the new men in the school were totally unknown quantities both from an athletic and a personal standpoint. They seldom had opportunity to know their fellow players, and if there happened to be two or three new men on the team they would group together, often to their own disadvantage and usually to the detriment of real school spirit.

Time for Mountain Climbing

The training schedule was modified occasionally to allow for interesting expeditions such as mountain climbing. Unfortunately the weather was unusually rainy and disagreeable most of the time but there were no complaints. If it rained too hard during the practice hour the squad was taken to the loft of the cabin and put through a course of calisthenics.

It is interesting to note accurately the effect of less than ten days of this sort of camp life on the men. As has been said before, a complete physical examination was made at the beginning and the end of the period. For purposes of comparison a condensed tabulation of the results is given below.

In looking over this table we see an average gain for each of thirteen boys of 3½ pounds in less than ten days. This is quite striking when it is considered that the second examination was

Physical Results of Ten Days of Camp Life

	Weight		Blood Pressure		Expiration, Inches		Inspiration, Inches		Heart		Lungs		Defects	
Player	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
A (age 19)	146	153	122/60	138/70	33½	34	39	38½	normal	normal	normal	normal	none	none
B (age 17)	125	130	104/60	120/80	33	32	35½	36½	normal	normal	normal	normal	none	none
C (age 17)	142	149	125/60	124/68	33	34	36	38	poor	normal	normal	normal	heart	none
D (age 16)	124	126	105/64	104/60	31	31	33½	34½	normal	normal	?	?	lungs	lungs
E (age 17)	156	159	124/60	140/60	34½	35	38½	40	normal	normal	normal	normal	none	none
F (age 16)	136	137	112/65	124/64	34	34	36	36	normal	normal	normal	normal	none	none
G (age 16)	163	163½	122/64	134/70	33½	34	37½	37½	normal	normal	normal	normal	none	none
H (age 16)	138	140	112/64	128/68	30	30	35½	35½	normal	normal	normal	normal	none	none
I (age 16)	162	166	128/66	136/88	34	34½	37	38	normal	normal	normal	normal	none	none
J (age 16)	160	162	116/70	120/64	34	34	36½	36½	rapid	normal	normal	normal	none	none
K (age 17)	150	153	116/70	128/70	33	33½	37½	37	normal	normal	normal	normal	none	none
L (age 16)	164	169	105/64	114/66	33	33	37½	37½	normal	normal	normal	normal	none	none
M (age 18)	138	142	116/54	124/60	32	32	35	35	normal	normal	normal	normal	none	none

taken the day following an all-day mountain climb and that the boys were taking the hardest kind of physical exercise every day. We note that the blood pressure was considerably elevated in many of the boys on the second reading, but we interpret this as a natural sequence of the violent exercise in the early stages of training. As a matter of fact this elevation of blood pressure is strongly indicative of a good heart muscle which is compensating in a normal manner for the added strain thrown upon it. It is highly probable that in each instance the blood pressure will slowly sink to a more normal point during the football season in spite of the strain of the games.

One Boy Forbidden to Play

One of the boys was obviously not football material in spite of his pluck and enthusiasm. Certain facts were discovered on the examinations which would have remained unnoticed otherwise possibly until a good deal of damage had been done.

The health of the squad during the entire training period was as nearly perfect as one could imagine or hope for. There were the usual blisters and cuts, but there were no cases of illness. One boy woke me at 2 a. m. one night complaining of headache, and to him I gave a single migraine tablet. This was the only pill or medicine of any kind that was administered.

Experience Needed to Run Training Camp

In conclusion it may be said that the experiment seemed to be a success. I would caution others against tackling a job of this caliber without considerable experience not only in camping but in handling boys who are too old for physical restraint and disciplining and too young to have mature judgment. Such a crowd can get into considerable trouble in little time. Once out of hand they may run riot either in the camp or in neighboring towns.

It is imperative that such a camp be kept under the strictest sanitary rules, and the man in charge must know the essentials of military hygiene and sanitation or serious epidemics may break out. In general it seems to me that from the results observed in this little experiment such a policy of preseason training has excellent possibilities for good and could go far in eliminating some of the worst features of football, chief of which are a crowded and heavy schedule of intensive training and hard games with improperly trained boys.

Child May Choose Food within Limits

A RECENT experiment in which children are allowed to choose their own foods from a wide selection placed before them has given rise to confusion in the minds of many parents as to the feeding of their own children, according to Lydia J. Roberts, assistant professor of home economics at the University of Chicago, and specialist in nutrition.

The experiment consists in allowing young children to select their diet from about twenty-five natural foodstuffs placed before them and keeping accurate records of the children's growth and their attitude toward food. From the first, all infants chose meals sufficient to maintain themselves and there was no evidence of indigestion or discomfort. The babies have maintained a normal rate of growth.

Now this does not mean, Miss Roberts points out in the *Child Health Bulletin,* that children may be allowed to eat anything they please from the miscellaneous foodstuffs of the average American home. Safety in giving freedom of choice lies in placing only simple, healthful foods before the children. A diet of refined foods, sweets, fats, white bread and other highly milled cereals, with mixtures of highly seasoned foods, is disastrous, as has already been shown by numerous nutrition studies.

The most significant point of the experiment is in the psychology of child-feeding, Miss Roberts believes. The rule of offering food to the child and never showing the slightest concern whether he eats it or not seems the safest procedure. The surest way of getting an adequate diet eaten is to provide only simple wholesome foods with no high seasoning to spoil the taste; to arrange a normal program of play, rest and sleep in order that the child may be hungry and then allow his appetite to decide what he will eat when he comes to the table.

To sum up the experiment, Dr. Clara Davis conducted a valuable piece of research work which throws light on many problems of child feeding. It does not, as is being popularly claimed, upset all our previous knowledge of child nutrition, and parents must not jump to hasty conclusions.

ADVICE TO A WOMAN WHO WANTS SOME

Medicinal Plants *in the* Garden

By Edward Kremers

A corner of a small pharmaceutical garden.

ONCE upon a time an enthusiastic instructor in pharmacognosy raised a few belladonna plants in the pharmaceutical garden of the college to which he was attached. The plants grew so luxuriantly that he could not resist the temptation to do some paper gardening. As a result of his pharmaceutical arithmetic he announced to the world, through the medium of a metropolitan Sunday paper, that a profit of $5,000 an acre might be realized by cultivating this "beautiful lady."

After the story appeared, the writer began to receive all kinds of letters. An office worker in a big city who had an abandoned farm some hundred miles away was sure he could raise a good crop of peppermint if he could get "all the necessary information" in the form of a printed and, if possible, an illustrated bulletin. A retired school teacher, whose windows faced the back yard had a desire to turn the waste space into a profitable paradise by raising a variety of medicinal plants. The details of the letters varied, but the object was always the same—easy gain.

Medicinal Plants Not for Profit

Now, after years of replying to such letters, one referred from HYGEIA comes to hand. It begins: "I am planning a small back-yard garden this summer and thought it might be nice to have a small section with medicinal flowering plants. I know absolutely nothing in regard to horticulture so the more details the better."

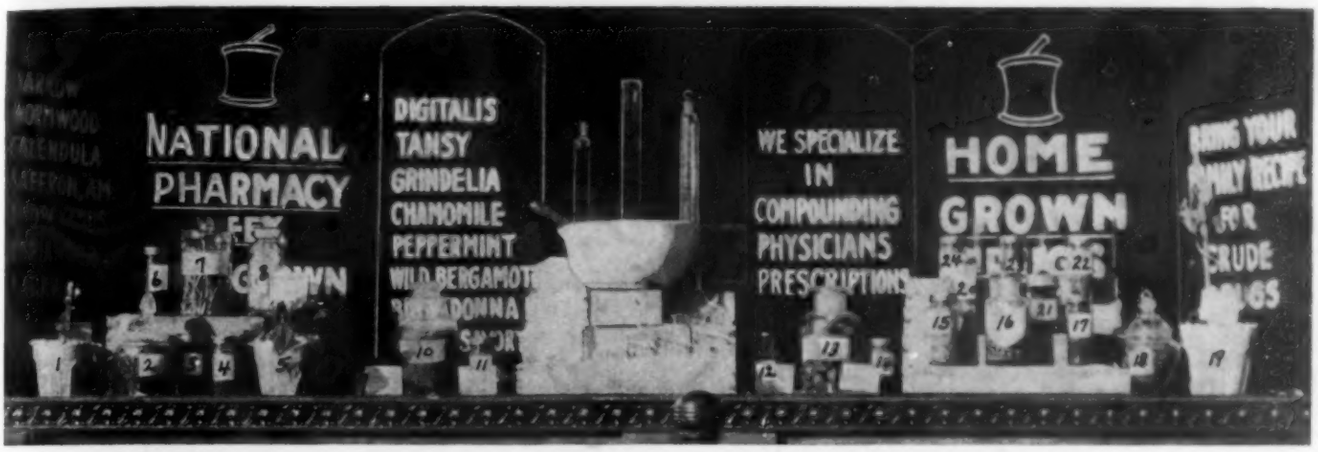
This is so refreshing that I cannot resist the opportunity to reply in print.

If it was not a woman who wrote the letter it was certainly written by a person with a feminine touch that ought to make a success of plants, experience in "horticulture" or no experience. For her benefit I am submitting a few photographs of a back yard in which medicinal plants have been raised successfully for a number of years. As these photographs show, the surroundings are not inspiring, but the particular back yard has been made beautiful by the plants raised therein. Moreover, it has become a source of attraction to neighbors and passersby.

Go Ahead without Much Information

I advise the home gardener to go to it without much reading. Experience is the best teacher in this as in many other things. My first experience involved the sowing of lettuce and radish seeds in hard pan dumped in the back yard from an excavation the previous summer.

Do not let a trifle such as this discourage you, but go ahead in spite of partial failure. If you can start with some knowledge of gardening, so much the better. But go ahead without asking many questions, no matter how sensibly you may be able to formulate them. Moreover, there will be many persons who are willing, even anxious, to advise you, some with good suggestions, some with advice not so good. Just go to it and enjoy your mistakes as well as your successes.

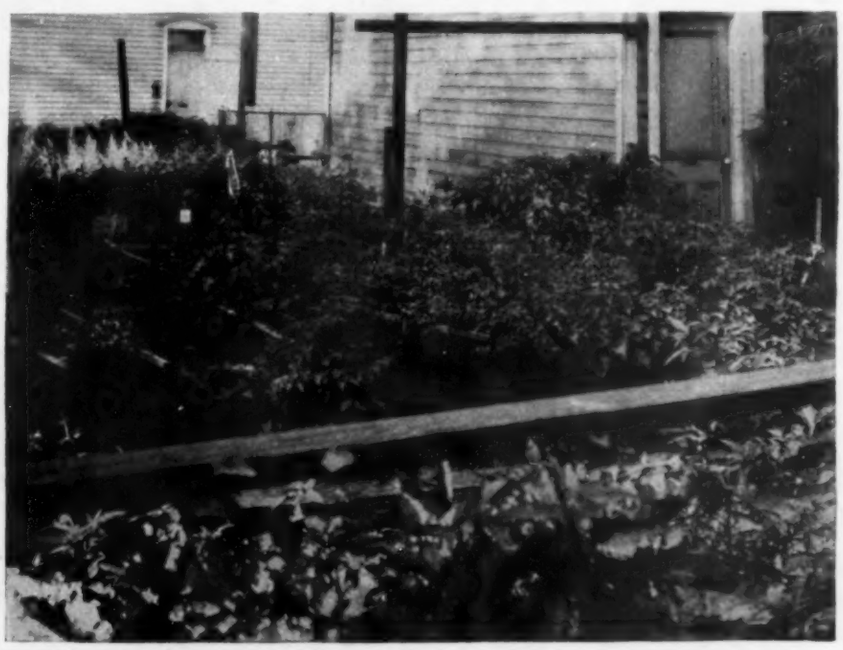


All the medicinal plants on display in this drug store window were grown in a small garden. They are: 1, poppy; 2, wormwood; 3, mentha piperita; 4, tansy; 5, digitalis; 6, mentha piperita; 7, equisetum; 8, colocynth; 9, mentha piperita; 10, eupatorium (boneset); 11, chamomile; 12, carthamus; 13, stramonium; 14, coriander; 15, hedeoma; 16, grindelia; 17, yarrow; 18, chamomile; 19, poppy; 20, ginseng; 21, mentha piperita; 22, achillea (yarrow); 23, absinthium; 24, tansy.

The illustrations with the attached plant names will suggest more varieties of medicinal plants than you may want to try the first season. If you are within reach of the country—and who is not in these days of the automobile?—dig up a few bloodroot rhizomes and transplant them into your garden for next year. Get a few hepatica plants and, next winter when they are covered over with snow, read about the doctrine of signatures, even if your log is a gas log in a big city apartment. Try a few poppy seeds and enjoy the gorgeous blossom in summer, even if you are not tempted to make incisions into the capsule to collect a drop or two of juice that can be dried to a microscopic "ball" of opium. Above all, plant a few foxgloves, so that you may have flowers the first year of your medicinal gardening experience.

If by any chance you are a physician's wife, present your husband in fall with a handful of digitalis leaves. Possibly all he knows about digitalis is that it grows. Show him how it grows and he will become interested in your garden not only as your husband but as a professional man as well.

So just go to it and enjoy yourself. Next year you will make a better start. By and by you will learn how to arrange your plants so as to make them more decorative. You will plant maiden hair and male fern in shaded places. You will delight in the jack of the pulpit transplanted from the woods the previous season and you will sit at his feet listening to his sermon on how beautiful nature may be even in a back yard, besides gaining knowledge of the sources of many potent medicines.



A back-yard garden that attracts the attention of passersby, as all the plants are medicinal in nature.

Unheeded HAZARDS of the Home

By Gaylord W. Graves

FROM the standpoint of little Buster, that exponent of a large and potentially important group dignified by the term the preschool child, home may be sweet but only within certain limitations is it safe. Although dangers of the outside world linked up with speeding trucks, unmuzzled dogs, unripe apples and the other fellow's whooping cough are faced deliberately with guard up, home itself always seems to be presenting situations not only unsafe and unexpected but apparently unavoidable.

First in the reckoning of illustrative cases is that of 4-year-old Coco Spinoco, early endowed with enthusiasm for spaghetti and an unusual capability of grasping the pendulous. Could it have been mere chance that made the day of his particular reckoning Easter Sunday?

Bloody about the mouth but none the less articulate, Coco lay on the floor of a so-called drug store protesting against such first aid as the place afforded and unwillingly awaiting the ambulance. In a fall from the open kitchen window on the fourth floor to the courtyard below he had providentially impinged on one slack clothes line after another and only beaten his reckless mother, who pursued him by way of the stairs, with a margin of ten seconds. Small wonder the inner aspect of Coco's lip required stitches.

After the episode somebody had the brilliant idea of hitching a clothes line to Coco to keep him inside the kitchen.

Next is the incident in the life of little Bobby, 3 years old, whose mother had devoted herself conscientiously to child psychology and knew full well the advantage of the rest hour. On the particular afternoon, having spanked her noisy offspring thrice because of his disinclination to take a nap, she wheeled his crib near enough

Coco providentially impinged on one slack clothes line after another in a fall from the open kitchen window on the fourth floor.

the window to insure a good breeze and in the spirit of the Levite left the scene of his wailing.

How deplorably inaccurate was her estimate not only of Bobby's atmospheric demands but also of his migratory capabilities became apparent upon the sudden appearance of an incoherent maid from the neighbor's across the street. The visitor gesticulated that the lower two-thirds of Bobby was hanging from the window, supported only by his forearms and fingertips. Although the perpetrator of the stunt was safe back in bed when his mother confronted him, the brick dust and soot which the front of his garments had accumulated confirmed the authenticity of the report.

Like Coco, Bobby, as it happened, resided on the fourth floor, but beneath his window were no convenient clothes lines.

On the floor below Bobby another small boy, who had just begun to explore his domain, irresponsibly stuck one hand through a French door pane and almost completely spoiled Christmas with his hemorrhaging and his stitches. When this youngster's father got the New Year's mail he reflected that French doors must be quite an asset to surgeons.

Abie preceded his memorable collision with a preliminary bit of skidding occasioned by the slipping of a hall rug at just the instant when he was negotiating a quick turn into the kitchen. Both because the hall floor was too well waxed for foundation purposes and because the door jamb had a sharp edge, Abie's forehead required embroidery work. (Lucky it wasn't a girl's forehead!) Perchance when the victim grows up to be an architect he may devise a method of eliminating not only sharp edged door casings but the traditional crack behind the partly opened door, that attractive aperture which for so many generations has trapped little fingers to the avulsion of finger nails. If Abie's genius should so far prevail, a new postage stamp might appropriately be issued in his honor.

Probably the chief reason why waxed floors don't kill more people is because such floors are for the most part still found only in single-floor domiciles known as flats. Doubtless waxed stair treads will eventually reduce the rural population if the agricultural law renders this pernicious form of luxury available to the country as a whole. As it now stands, falls make up one of the largest casualty groups we have.

Abie skidded on the hall rug and his forehead required embroidery work.

Skidding, of course, is at its best in the bath room. Every year in an American town boasting souls to the number of 2,000 or more, some valued citizen breaks arm, leg or neck in the pursuit of cleanliness. So long as soap is slippery and rubber mats are uninviting, the source of the hottest water and livest steam will paradoxically serve as the smoothest skating rink in the community.

Sometimes one wonders why the plumber, the steam-fitter and the janitor can't get together and elucidate why it is necessary to have so much heat in the water supply pipes and so little in the radiators. Nothing makes the problem seem more important than the sight of a 14-months-old baby in the convulsions induced by a fatal burn sustained in an unguarded moment by pitching over the low edge of a bathtub of boiling water in which his mother was soaking a batch of laundry.

So many casualties from electrical equipment including bulbs, curling irons, heaters, vibrators and ultraviolet lamps have befallen persons who have merely touched such objects while tub-bathing that it is easy to understand why criminals, who probably give more forethought than most people to the menace of electrocution, have a special aversion to baths.

In the old days the infant of the household toddled up to the living-room stove and sticking his fingers inquisitively through the mica window in the stove door got his education about heat cheaply. Today the baby lops over against the radiator when unfortunately it is hot, even before he can walk, and the resulting burn, not infrequently deeper than an ordinary stove burn, educates the whole family during a month of surgical dressings.

Although cigaret burns are to be avoided it is probably more important not to make or drink tea than to smoke in close proximity to the baby. Hot soup belongs in the same category of menaces as hot tea. Behold how great a third degree scald a half-cupful causes!

As far back as the time when knights were bold, it used to be father's custom to make rounds of the premises and lock doors before retiring. In old-fashioned homes where burglars have never demonstrated how antique and useless is this practice it still persists. Why not popularize a procedure more protective? Give all the gas jets "the once over" before going

to bed, not forgetting the gas heater and the gas iron. Too often it is the neighbor from outside who first smells escaping gas. If there is a chance that the gas will be left only partially shut off, why not leave doors unlocked for any chance visitor, even a bootlegger or a burglar? Incidentally, if it is too cold to start the car with the garage door open, why not select the finance company's representative to take this bit of added responsibility and thereby reduce the number of instalment collections?

Illuminating gas and exhaust fumes are not the only chemical agents that emanate disastrously within the confines of the home. Aniline and benzol paint removers, shoe dyes, aniline-containing laundry inks and numerous similar preparations may produce profound poisonous effects most insidiously. From sources as far apart as New York and Kansas City several cases of serious poisoning have recently been reported in infants from exposure to the fumes of a disinfectant sprinkled as a supposed insecticide over a mattress or bedding. Everything on a commercial label is not advertising. If the consumer has no time to read the labels on unfamiliar chemical products, it is largely his own fault if the fire department or the coroner must be called.

Little Busters need toys larger than mouths.

The family medicine chest, as the natural storehouse for various potent substances, deserves special consideration, particularly as bitter tasting and nauseating preparations are gradually being supplanted by modern drugs in more inviting form. It is not enough to have the medicine cabinet itself in a place inaccessible to little hands. Drugs in use temporarily outside the cabinet must also be kept out of reach of children. One little fellow abstracted from a chiffonier drawer some attractive chocolate-coated tablets and a few minutes later went into convulsions. He was saved only by the prompt arrival of a neighboring physician who, knowing that some "laxative pills" contain strychnine, rushed his patient to a hospital, where third degree relief measures could be employed.

If father's cuff links, minute articles of hardware such as cotter pins and washers, and United States currency of the smaller denominations could be made unattractive to youngsters, clinics now devoting their expert activities to the recovery of such articles from various anatomical hiding places might readily reduce their staffs. Although "they shall not pass" applies to most things bigger than a quarter of a dollar, and the open safety pin exceptionally makes most phenomenal trips through pyloric orifices in little stomachs if it gets below the neck level, nevertheless the x-ray work indicated in any case may cost the family considerably more than a missing piece of currency.

Statistics of large insurance companies show that home accidents are legion, both because home is inhabited by so many persons for so many hours out of each day and because in the home the ordinary individual is not alert to danger. More than one-fourth of 95,000 fatal accidents in the United States in 1927 occurred in homes. During the first few years of childhood the individual's hazards in even greater degree are hazards of the home.

The problem of unfit food and bad cooking and feeding is being met. Little Buster will ultimately receive his vitamins, even if they come in tin cans. Eventually the psychologist will take little Buster's fears and obsessions away, even if they have to be removed more gradually than his tonsils. Still, something catastrophic may happen.

When shall we install enough window gratings in all the nurseries, enough gates at the heads of stairs, and enough shields for pipes and radiators? When shall we insist on toys larger than mouths, keep knives and scissors and needles where they belong, and watch little steps until the age that can appreciate the caution, "don't touch," is attained? Better barred windows and a few other minor inconveniences than "gates ajar" for little Buster. Most accidents are of human origin and therefore preventable.

The right kind of fear in the family may be the beginning of wisdom.

A MODERN Biologic Products Farm

By Norman Goldsmith

WOULD you like to see snakes milked, mice and rats purposely bred by the thousands, calves manicured with greater care than society's latest darling? Would you like to see poisons so powerful that 0.0000000000000000001 of a cubic centimeter would kill a guinea-pig, and antidotes so much more powerful that one unit would neutralize a hundred units of the poison? Would you like to see a machine turning 18,000 times a minute?

If you would, come with me to visit a modern biologic products farm.

"Milking snakes!" you exclaim. "Well, I always thought that only mammals gave milk."

True enough, it's just a scientific slang term. They "milk" snakes at this farm to obtain venom, with which they manufacture immune serums to protect persons unfortunate enough to have been bitten by poisonous snakes.

This is how they do the "milking." A rubberized cloth is stretched over a wide mouthed glass flask. The snake is taken from his cage, his head freed and the flask placed before him. It is interesting to note that a snake's head is extremely tender, so that when the technician is holding him down to the floor, a fine rubber mat is placed beneath him.

Even with such hospitality and courtesy, Mr. Snake is liable to get angry, and having no better way of expressing his anger, he strikes madly at the glass flask and sinks his sharp fangs deep into the rubberized cloth. These fangs are two long, hollow teeth, with the puncturing ability of a hypodermic needle. As he strikes, the venom, a thick yellow fluid, is ejaculated and collects in the flask.

If more venom is desired, the "milker" massages the snake's gums directly over the poison glands and is able to express a considerable additional quantity of the poison. A snake from 3 to 4 feet long is able to deliver from a half to a full teaspoonful at one "milking."

A small amount of the venom is injected into an adult horse. The theory behind this process is that antibodies, substances that will neutralize the toxic effects of the snake poison, will be formed by the horse. This depends upon using only a small amount of venom the first time, but with subsequent injections there are more protective antibodies in the horse's blood and greater quantities of venom can be given. By injecting the venom in gradually increasing doses, the horse slowly develops an immunity to the snake poison, so that eventually it is able to withstand hundreds of times the amount of venom that would kill an unimmunized horse.

The horses are bled, the serum is collected from their blood, and the final product is highly concentrated. This substance, which contains the essential antibodies against snake poisons, is called antivenin. It is issued under license from the U. S. Public Health Service, and before each release the lot must show sufficient potency against the deleterious effects of venom secreted by the most dangerous North American snakes, especially the diamond-back rattler.

Manicuring calves on a modern biologic farm.

"But doesn't it hurt the horse?" you may ask. "And you bleed them, too, didn't you say?"

It does not hurt the horses, certainly not much. In the beginning, the amount of venom injected is very small and causes only a slight reaction. The horse may refuse to eat for a day and become restive. But by the time larger doses are given, the animal has developed a considerable immunity and suffers no ill effects. The immunizing process is spread over a long

period, sometimes as much as three or four years.

Bleeding? There is evidently little pain attached to this, for six horses are bled at one time in a single row. They are placed side by side and if there were any discomfort, the kicking would make this impossible. Also, there is a white tile wall in the bleeding stalls which has stood firm some twenty years and still has to show cracks from an angry or pain-born kick.

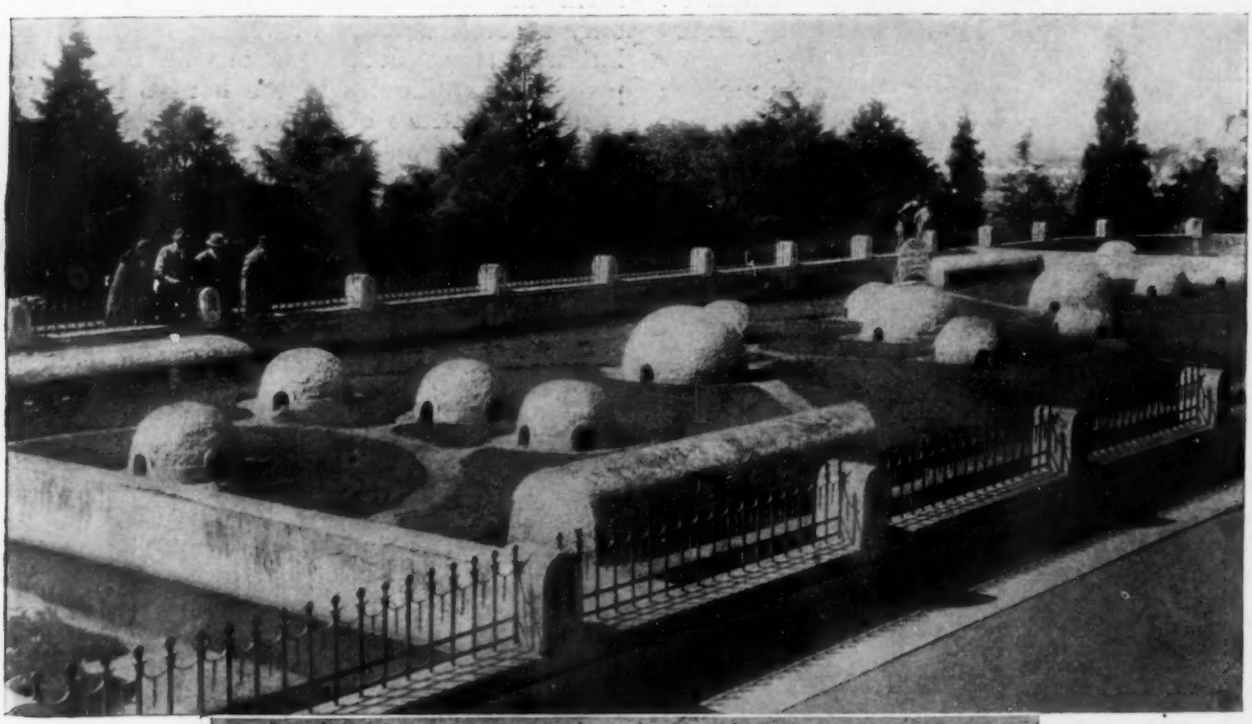
Why are horses used? One reason is that they are large and considerable amounts of serum can be obtained from them. Another is their docility. It is easier to obtain blood from a horse than from most other animals. You know how the veins stand out on a horse's neck; a fine hollow needle is easily plunged into such a vein, and the blood is then allowed to flow into sterile buckets by its own force. About nine quarts of blood are obtained at one bleeding.

"Isn't that a lot?"

It does sound like a lot, but in proportion to a horse's size and weight, it is no more than a human donor gives when he is bled for a transfusion. Of course, it is always to the economy of the company to keep the horses in good shape and not to weaken them by over-bleeding.

Diphtheria antitoxin is made by inoculating horses until antitoxins are formed, exactly as is antivenin, except that diphtheria germs instead of snake venom are used to promote antibody formation. The blood is collected, allowed to clot, and the serum taken off. This serum, containing the immune bodies, is aged for two months during which time the impurities precipitate out. Then an elaborate process of concentration is begun, so that eventually all the essential antibodies are contained in small bulk. This makes for easy injection, especially in children.

The idea of antitoxin is to neutralize the toxins or poisons produced by the diphtheria bacteria in the diseased person's body. Children are often unable to form antibodies of their own quickly enough to combat the disease successfully, but by giving them antibodies from a



The famous snake farm at São Paulo, Brazil. At this Butantan Institute is made an antivenin from the poisonous snakes of South America.

A moat surrounds the snake farm and helps prevent the escape of the poisonous prisoners.

Photos by Ewing Galloway

horse's blood they are able to wage a successful battle.

When finally completed, antitoxin is so powerful that the ordinary dose given to a child suspected of having diphtheria would protect a million guinea-pigs against the disease.

Now listen to the elaborate procedure followed in preparing smallpox vaccine from calves. Vaccine is the substance used when the doctor vaccinates you against smallpox. Instead of supplying you with antibodies, the vaccine stimulates your body into forming them. When the organisms of smallpox attack you, you already have hosts of antibodies to repulse them, and so are protected from this frightful disease.

In producing vaccine, only milk-fed calves are used. They are tested for tuberculosis when they are first brought to the farm in a special quarantine, as incidentally are all other animals used in the production of biologic products. If the results of the test are negative, the calves are taken to special stables where keepers are constantly on hand to clean up all excreta.

The animals are clipped and individually immersed in an enormous bath tub, where they are bathed with boiled, sterile water. Here, their hooves are carefully manicured and their mouths are inspected for evidence of disease. Then they are rinsed and dried with a sterile towel. A calf, when he gets out of the bath, is about as clean as it is humanly possible to get him.

The calves are taken by elevator to an operating room. Here, under sterile conditions, they are inoculated with smallpox virus—in the lower layers of the skin. They are put into new sterile stables and watched for six days. Soon, a number of papules form on the abdomen. On the sixth day, these have changed to swollen vesicles, filled with a thin, pale yellow fluid.

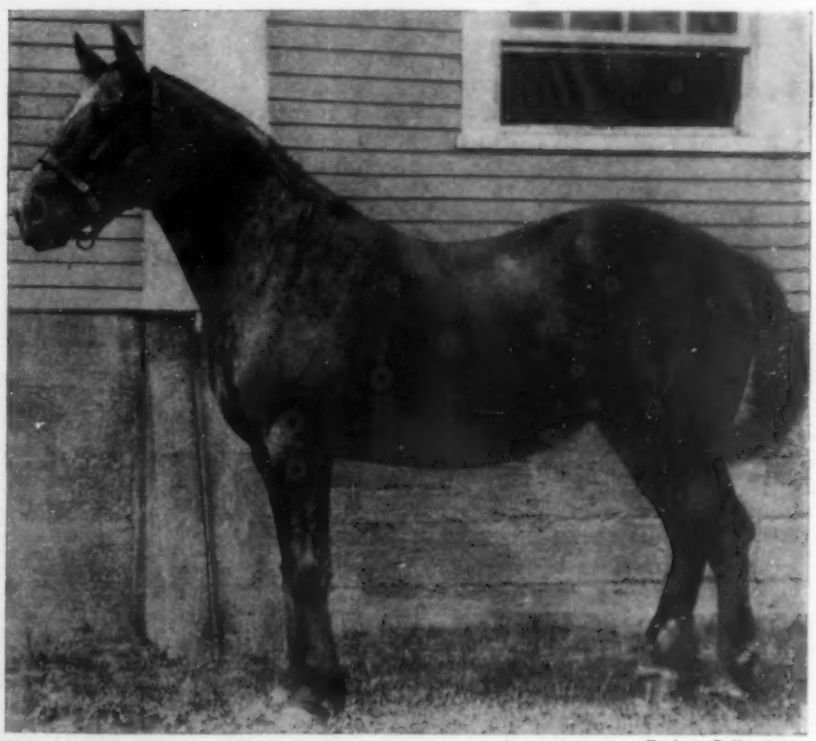
The animals are again transferred to the operating room, where by means of a quick blow on the head they are rendered unconscious. They are then bled to death. These are the only animals on the farm that are killed in the production of any of the products, the reason being that the dissecting out of each vesicle would be extremely painful.

The calves are examined once more, this time internally to see that they have no internal disease that might have escaped the observers. The abdomens are washed with alcohol. The vesicles are then curetted out, ground up and filtered, and a clear liquid is finally obtained. This is put into the tiny tube that your doctor uses when he vaccinates the baby.

All these elaborate precautions are undertaken in order to prevent contamination with tetanus spores and other dangerous infective organisms in the final vaccine. A further precautionary measure is that vaccines are made only in the colder weather, when vaccines keep better and tetanus spores are less prevalent.

On the farm, there are thousands of gallons of reserve serums for protection during great emergencies. Thus, during the war, enormous quantities of tetanus antitoxin were required, and the need was readily met.

Speaking of quantities, in making acidophilus milk, thousand gallon tanks are employed, and these contain 150,000,000,000 bacteria per cubic centimeter or 750,000 million a teaspoonful.



Ewing Galloway

Tess, the horse pictured here, has saved thousands of persons from death from lockjaw. In eleven years, she has produced 1,023 quarts of tetanus antitoxin, containing 265,062,500 antitetanic units.

Of course, there are the thousands of rabbits and guinea-pigs, and rats and mice, all used in the experimental work that such an institution must constantly carry on, and in the standardizing of different products and drugs—a most important task.

Finally, there is the host of scientists and bacteriologists who form the personnel of such an organization.

And so we get a brief glimpse of a modern biologic farm, where snakes are milked and calves are manicured. Its product insures you and your baby a better chance at life.

The serpent of Aesculapius, entwining a staff, and the dictum of Hippocrates.

The Magic Wands *of* Medicine

By
James A. Tobey

The dictum of Hippocrates: Life is short, art is long, experience is difficult.

TWO symbols have been adopted as the distinctive emblems of the medical profession. They are the knotted rod and serpent of Aesculapius, and the magic wand, or caduceus, of Apollo. Each is appropriate for the purpose, for each has an interesting heritage of legend and tradition in ancient mythology.

The staff of Aesculapius with its encircling snake is considered by some authorities on medical heraldry to be the more authentic of these two devices, and it has been adopted as an insignia by the American Medical Association. The caduceus, on the other hand, is worn on the uniforms of army medical officers and on those of the officers of the United States Public Health Service.

It is related of Aesculapius that he was seated in the tent which was his medical place of business some 1,200 years before Christ, treating a patient named Glaucus, when a snake entered and coiled about his staff. By this act, the wily serpent conferred great wisdom on the god of medicine. Whether Aesculapius himself was a real person or a myth is uncertain, but he was publicly deified in Athens in 430 B. C. as the god of the healing art.

Aesculapius came of a truly medical family, for he was reputed to be the son of Apollo, the physician of the gods, and of the nymph Coronis. He was instructed in medicine by Chiron, who, despite his name, was not the founder of the cult known as chiropractic, which can boast no such ancient and honorable heritage, but was a centaur, one of those fabulous monsters who were half man and half horse. Among the daughters of Aesculapius were Hygeia, whose name adorns this magazine, and Panakeia, who gave us the modern word "panacea." Another of his alleged descendants was Hippocrates, the Greek physician who is known as the father of medicine.

Hygeia, daughter of Aesculapius, feeds milk to the serpent, which signifies wisdom, power and health.

In their reverence for Aesculapius, the ancient Greeks erected many temples in his honor, placing the greatest of them at Epidaurus. Here they commissioned one of their leading sculptors, Thrasymedes, to depict the god in imperishable stone. The resulting statue shows a bearded gentleman seated on a gold and ivory throne. In one hand he clasps his knotty rod, while in the other is the ubiquitous snake. Every statue of Aesculapius is adorned with one of these reptiles, which were indeed significant of the magical medicine of the time.

When a modern man sees snakes, medical assistance is frequently necessary, but the connection between the serpent and medical science goes somewhat deeper than that. From the earliest periods in history,

snakes have been worshiped as symbols of magic processes by which fertility could be conferred and diseases healed. The fact that the serpent changed its skin was thought to purify it, and the reptile was always considered as endowed with unusual shrewdness. Much folk-lore developed on the subject and many curative powers were attributed to snakes. Cadmus, of alphabet fame, was said to have been turned into a snake in order to be able to cure the ills of mankind.

"And Moses made a serpent of brass and put it upon a pole," say the Scriptures (Numbers 21:9), "and it came to pass that if a serpent had bitten any man, when he beheld the serpent of brass he lived." A Cretan goddess of 4000 B. C. was found by the excavating archeologists to be grasping serpents, and the ancient Egyptians often depicted their gods and goddesses in the company of these reptiles. Osiris, god of life and health and of fertility, was usually attended by a serpent. Even such an enlightened emperor as Constantine was reported to have taken a serpent trophy from Delphi in order to protect Constantinople. Snakes are still worshiped in some parts of the world, as in India and Africa.

When Aesculapius was treating a patient in 1200 B. C., a serpent entered his tent and coiled about his staff. By this act, the wily serpent conferred great wisdom on the god of medicine, according to ancient belief.

In many of the statues of Aesculapius, the snake shown is a poisonous one. It lurks close to his hand, but the great physician is unconcerned, for he possesses the wisdom of these serpents and can cure their bites. The statues of Hygeia frequently display a serpent in her hands drinking milk from a saucer. This has been interpreted to indicate that, sage as he was, the snake could gain knowledge from the cup of Aesculapius, though it might also be explained as meaning that Hygeia, being a wise woman and valuing her pet, realized that milk was the most nearly perfect food that could be given to any living thing.

The serpent, then, was man's ancient symbol for wisdom, power and health, while the knotted rod was the emblem of defense against disease, and the support of those learned in physic. The knots may, in fact, have represented the knotty problems solved by the healer in his quest for the health of man. In time of epidemics Hygeia was said to emerge from her temple and by deftly waving her snakes dispel the outbreaks.

The caduceus, the smooth, winged rod entwined with two snakes, has an origin even more venerable than that of the rod of Aesculapius, for reproductions of this symbol have been found on Babylonian vases dating from about 4000 B. C. The Greeks apparently got their caduceus from Mesopotamia and gave it to Hermes, the god of fertility, of commerce, of thieves (strange relationship!), conductor of souls to Hades, and, when not otherwise engaged, messenger of the gods. Apollo was probably another name for Hermes, while the Roman deity having the same functions was known as Mercury.

Legend has it that Apollo was traveling in Arcadia one day when he came upon two snakes engaged in mortal combat. Not wishing these sacred reptiles to harm each other, he separated them with his olive staff, which thereupon became a symbol of peace. The staff had been decorated with fillets, but after this episode the ribbons were replaced with the entwined snakes, to denote plenty. The wings were added to the staff to indicate the speed of the messenger of the gods. Hence the caduceus, which really belongs as much, or even more, to commerce as to medicine.

The caduceus was apparently first applied as a sign of the medical profession when it appeared in the coat of arms of Sir William Butts, physician to Henry the Eighth. About the same time, early in the sixteenth century, or a little sooner, one of the great medical printers of the period, Johann Froben (1460-1527) of Basel, employed the device as a sort of trade-

mark on his books. About the middle of the nineteenth century the Churchills, famous English publishers of medical volumes, placed the caduceus on their title pages.

This emblem appeared shortly thereafter, in 1856, on the uniforms of hospital stewards of the medical department of the United States Army. Not until 1902, however, was it worn on the uniforms of medical officers, though the military dress of the officers of the United States Public Health Service had been adorned with a caduceus and anchor for some years before that date. Since the Public Health Service had evolved in the Treasury Department from the Marine Hospital Service, established in 1793, the significance of the nautical device, the anchor, on these uniforms is obvious. Officers of the British Royal Army Medical Corps are said to employ the knotted rod and serpent as a collar device.

When the shepherd king sang, "Thy rod and thy staff shall comfort me," he may not have had in mind the ministrations of the physician, but well might he have had them. To the true physician, who possesses the heritage of the knotted rod of Aesculapius, the world owes an eternal debt of gratitude. The present wearers of the ancient symbol are, in general, worthy of it. The magic wands of modern medicine are the prevention of disease and the promotion of health, endeavors in which the followers of Aesculapius assume a most prominent rôle.

Proper Etiquette Will Stop City Noises

RECOGNIZING the serious effects of city noises on the nerves of the population, the New York City health department is conducting a campaign to reduce the volume of noise. Much of the noise that annoys is a matter of etiquette, lack of consideration of the other person. The department recently drew up the following set of rules for what it calls "noise etiquette":

For Automobilists

1. Look to the brakes on your car; squeaking brakes cause a large share of the complaints received during the year.
2. Don't toot the horn unnecessarily. Tooting to attract the attention of your friends in the house is lazy and selfish. Tooting during traffic waits accomplishes nothing but increases the nervous tension of those waiting in line and irritates every one within earshot.
3. Is the muffler loose on your car? The accumulated sound caused by loose mufflers creates much of the unpleasant pounding and jarring of traffic, also causes louder exhaust cut-outs.
4. Equip all possible trucks with pneumatic tires.

For Householders

1. Give the children the quietest rooms in which to sleep.
2. Use sound-absorbing rugs, draperies, screens and shelf-linings, especially in bedrooms, to overcome noises entering from the outside.
3. Don't give parties often enough to get on the neighbor's nerves.
4. Don't indulge in loud music, laughter and conversation after the children have gone to bed unless their rooms are insulated against noise from the rest of the house.
5. Use shock-absorbing ash cans. A mat of hemp or rubber fixed to the base of the can will take care of this or mats can be placed on the sidewalk to receive the cans.
6. Dog owners should endeavor to keep their animals quiet.

For Radio Owners

1. Don't let loudspeakers in shops and dwellings rise above the natural loudness of the human voice. It is as inconsiderate to penetrate into other people's dwellings and places of business with the magnified tones of radio loudspeakers as it would be to enter some one's private quarters and shout.

For Office Workers

1. Make the fullest use of sound-absorbing partitions and screens both to dull the office-caused noise and to absorb street noises.
2. Put noisy machines where they can least disturb every one concerned and make full use of mats to absorb vibration and of screens and partitions to absorb sound.
3. Speak directly into the phone; there is no need then of speaking so loud that others in the office have to hear your conversation.

For the Street

1. Young people should refrain from front stoop concerts during reasonable sleeping hours for the people in the neighborhood.
2. Taxi drivers waiting at all night stands should refrain from loud talking.
3. Doormen should use flash light signals or number board signals instead of whistles as soon as darkness falls.
4. Milkmen and garbagemen should refrain from shouting while they are on their early morning rounds.

SIMPLE LESSONS *in* *Human Anatomy*

By B. C. H. Harvey

LESSON XII, Cont.

THE RESPIRATORY APPARATUS

THE nasal cavity is the much expanded upper segment of the air tube. It extends from the openings on the face back to the pharynx; toward the side it extends far out under the eyes; vertically it extends from the palate up into the forehead in front of the brain. Throughout this enormous extent thin, bony partitions and walls run, dividing the great air space into small parts and recesses (fig. 126). The external nose, which we see on the face, contains only a small fraction of the whole nasal cavity. The walls and partitions in this external part are not bone but cartilage. Cartilage is flexible and elastic, so blows on the nose do not break it; if it is flattened out the elastic cartilage restores its shape.

The most important partition wall is in the middle line (fig. 126), dividing the nasal cavity into right and left halves and supporting the brain case above and the palate and upper jaw below. Other partitions incompletely separate the main nose cavity from the recesses. On each side these recesses consist of one big one under the eyes, three small ones on the medial side of the eyes, one big one in the forehead (fig. 127) and one big one extending up and back into the base of the skull. These great recesses surround the eye on three sides with a mass of warm air, and so prevent it from freezing. They help keep the anterior part of the brain warm—the part just behind the forehead (fig. 127). They make the bones in the wide area under the big brain hollow and thus light. If they were solid, the skull would be very heavy and a burden to carry around.

Fig. 126.—Photograph of a somewhat oblique section through mouth, nasal cavity and eyes. All the many extensive recesses are connected by passages. (From Morris' Human Anatomy, P. Blakiston's Sons.)

The entrance into each half of the nasal cavity is through a vestibule about ½ inch deep (fig. 127). This is lined by skin and filled with coarse hairs. They are moist and filter out some of the dust because it sticks to them. Likewise they halt the entrance of many disease germs.

From the vestibule the air goes into the main cavity, being directed up toward the ceiling. On the ceiling and upper walls is the olfactory or smelling region (fig. 128). In it the epithelium has no cilia but has cells that react to odors. They are connected directly with the brain. Glands surround them and air-borne substances dissolved in the fluid that the glands secrete provoke the sense of smell. If the air seems bad we hold our breath and move away to better air. Or we may like the smells and try to get more of them. In most quadrupeds the sense of smell is better developed and more useful than in man.

On the side walls of the main cavity, shelves are placed. There are three of them, called turbinates, sticking into the cavity, as shown in figure 127. The edges are often curled under (fig. 126). They have a light bony framework covered richly with blood vessels and are like radiators of a hot water heating system. As the air passes around these shelves it is warmed. Some animals that live in arctic regions have seven big ones. Only two of our three are well developed.

The tears run from the eyes through a duct that opens far down on the side wall of the nose (fig. 127), furnishing added moisture.

Because of the enormous extent of the nasal cavity infections of the nose, like

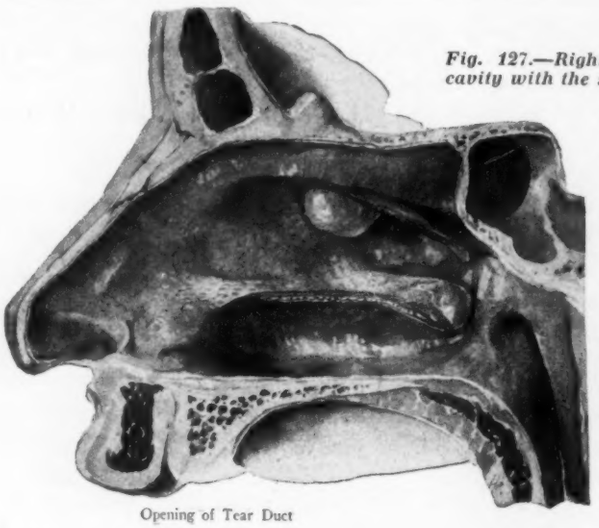


Fig. 127.—Right wall of the nasal cavity with the shelves, or turbinates removed, to show the openings of the recesses. (From Spalteholz, Herzil.)

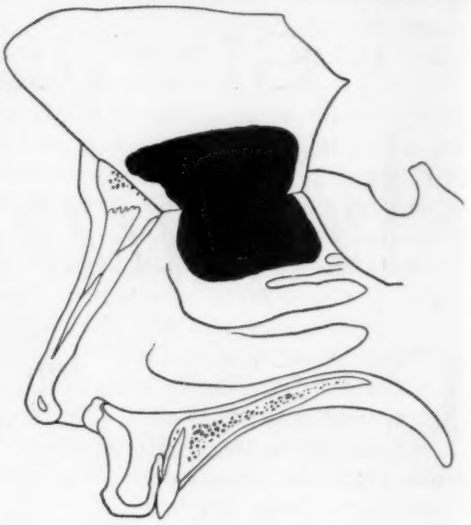


Fig. 128.—The extent of the olfactory region of the nasal cavity is shown in black. The median septum is figured as though reflected upward through a half circle. (From Spalteholz, Herzil.)

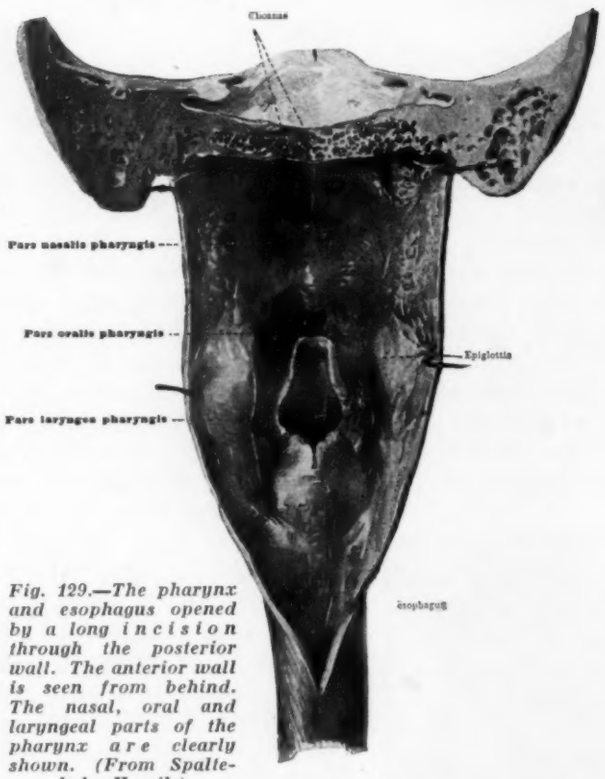


Fig. 129.—The pharynx and esophagus opened by a long incision through the posterior wall. The anterior wall is seen from behind. The nasal, oral and laryngeal parts of the pharynx are clearly shown. (From Spalteholz, Herzil.)

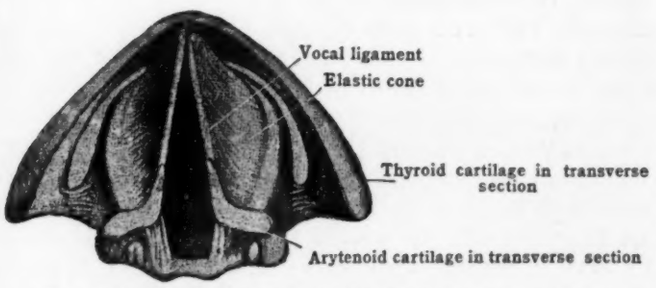


Fig. 130.—The elastic cone in the lower part of the larynx seen from above and behind. The trachea opens into it from below. Air when forced up through the slitlike opening along the tops makes the margins of the slit vibrate. By movements of the arytenoid cartilages the vocal cords can be made tense or lax and the slit wide or narrow at will. (From Morris' Human Anatomy, P. Blakiston's Sons.)

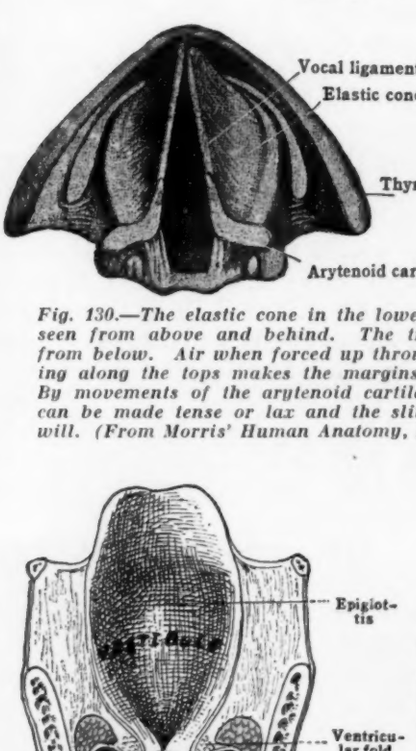


Fig. 131.—Larynx in section; the anterior half is seen from behind. (From Toldt, Human Anatomy, The Macmillan Company.)

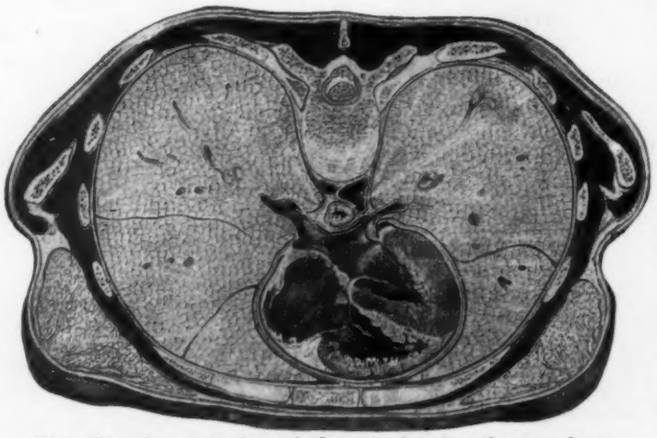


Fig. 132.—Cross section of thorax, showing the two lungs separated by a partition made of the heart in front and the vertebral column behind. (From Toldt, Atlas of Human Anatomy, The Macmillan Company.)

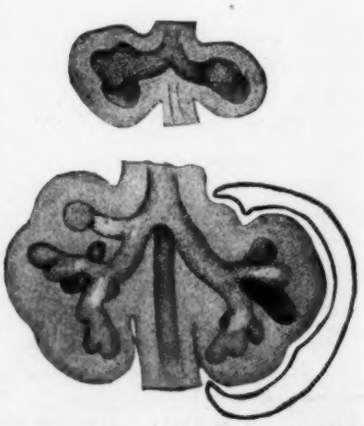


Fig. 133.—Lung buds growing off the lower end of the trachea in human embryos four weeks old (above) and five weeks old (below). On one side, below, the way in which the lung bud grows into the pleural sac is illustrated diagrammatically. (Modified from Morris' Human Anatomy, P. Blakiston's Sons.)

colds, make a lot of discomfort and may extend through the far-flung recesses to eyes or brain or ears or teeth.

The nasal cavities open behind into the upper pharynx through paired openings called choanae, each about 1 by ½ inch (fig. 129).

The upper pharynx is connected with the tympanic cavity of each ear by a cartilaginous tube, which carries air to the inner side of the drum membrane (fig. 85, November, 1929), thus providing a way by which air pressure on the two sides of that membrane is equalized. The cartilage in this tube keeps it from collapsing, and the tympanic cavity is ventilated continuously through it. In the upper pharynx is the valve, the soft palate, that shuts off the nose in swallowing. The pharynx, in general, being a food way as well as an air way, has the pavement of food ways (fig. 75, October, 1929). It has no cilia, but is a tough, thick pavement like that of the mouth. The middle and lower pharynx have already been described with the food ways.

The Larynx, or Voice Box

The larynx, or voice box (fig. 119, March), opens from the lower pharynx. Its vocal part is formed by a sudden change in shape of the air tube (fig. 130). The cylindrical cavity of this tube narrows at this level suddenly to a slit. The margins of this slit are the two vocal cords, made of elastic ligaments, covered on the inside with flat, tough epithelium. There are no cilia on the vocal cords. Above them the air tube suddenly expands again into a cavity called the ventricle of the larynx (fig. 131). This cavity above them gives the vocal cords freedom to vibrate and thus produce a note when air is blown between them.

Above the vocal cords are the two upper chambers of the larynx and a movable roof, the epiglottis; the cavity of the larynx consists thus of three chambers, one above the other (fig. 131). The middle chamber, the ventricle, is separated from the uppermost chamber by the ventricular folds. These are two flaps that project downward and inward. Their lower free margins are called the false vocal cords, being just above the true ones and parallel with them. These flaps each contain muscles capable of making them meet. Their shape and position fit them when in contact to prevent the air from going out, whereas the folds terminating below in the true vocal cords are well fitted to prevent air from going in.

The uppermost chamber, next the roof of the larynx, is the vestibule or entrance (fig. 131). It can be completely closed by muscle, which surrounds it. It is so closed in swallowing, and at the same time the movable roof, or epiglottis (fig. 129), is drawn down far enough so that a cushion on its lower surface covers over the closed vestibule. The epiglottis itself is shaped like a roof, sloping down from the middle ridge to both sides. It forms, therefore, an effective cover. Since it is attached at only the anterior end, it acts like a valve, opening for breathing but closing for swallowing.

The vocal cords can be made tense or lax, approximated or separated by muscles (fig. 130). They are nearly 1 inch long in a man, but only ¾ inch long in a woman or child; hence the higher pitch of women's and children's voices. They are attached in front and behind to cartilages and the muscles move the cartilages. Those at the posterior end, the arytenoid cartilages, are especially movable, and it is by acting on them that the muscles are able to influence the vocal cords and thus the pitch of the voice. We can identify individuals by their voices, but the peculiar personal qualities of the voice are not produced in the larynx. They are added in the mouth and nose.

The slit between the vocal cords, called the glottis, is made moderately wide for ordinary breathing (fig. 130) and very wide, and so almost circular, for a deep breath. It is closed suddenly during inspiration in hiccup; that is what makes the sound. It is closed in coughing till forced open suddenly by accumulated air pressure below it. It is narrow and the vocal cords are tense in singing high notes. The glottis is open in sneezing and yawning. In sneezing the outgoing air blast is directed through the nose, in coughing through the mouth. Sneezing is usually provoked by irritation of the nose, coughing by irritation of the walls of the upper two chambers of the larynx or of the vocal cords. The walls of these chambers are very sensitive, and should particles of food or water get into them by any chance they would be coughed out at once. The whole larynx moves up in swallowing (feel your own), going up to meet its roof, the epiglottis. Its total excursion up and down is about ⅘ inch.

In the crossing of the food path and the air path (fig. 122) we have a beautiful example of the automatic "touch-button" mechanisms found in the body. When food touches the walls of the throat or pharynx, we swallow at once. We cannot help it. The apparatus is automatic. It involves all the muscles of the pharynx and most of those in the larynx. They work in perfect order and time sequence. This apparatus is so delicate that control of it is taken away from our wills. We cannot interfere with swallowing even if we try. The air path is more under our control. We can talk or sing or hold our breath as we please—for a minute—but no longer. The breathing apparatus will not brook our interference if it is prolonged.

The trachea (fig. 119) is a tube 4½ inches long and nearly an inch wide. Its wall is reinforced by 16 or 18 bands of cartilage. These bands are

incomplete behind and thus form horse shoes rather than circles. The gap at the back is filled by muscle. The cartilages prevent collapse on suction and the muscles narrow the tube to lessen the amount of air intake or to give greater force to the outgoing blast, as in coughing or sneezing. As in all the air ways, there is much elastic tissue between the epithelium and cartilage. The trachea must stretch when the larynx or lungs move up and down.

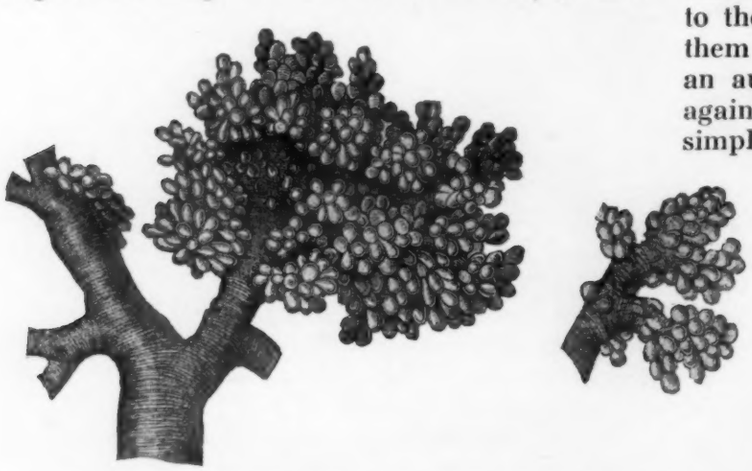


Fig. 134.—The minute air sacs of the human lung on the terminal twigs of the air tubes. They are overdistended and magnified 10 diameters. (From Toldt, Human Anatomy, Macmillan.)

The Lungs

The thoracic cavity is divided into right and left halves. The median partition between is made by the heart and great vessels and by the vertebral column, which projects far forward in the middle line (fig. 132). The lower end of the trachea is in this partition. Each of the two parts of the thoracic cavity has walls made by ribs on the sides, by the diaphragm below and by the partition in the middle (fig. 123, March number). Each part is lined by a membrane forming a closed sack, called the pleura, closely applied to all the walls.

The trachea has two buds in the embryo which grow out from the partition against the inner wall of the pleural sac (fig. 133). These are the right and left lung buds. As they grow they shove in the inner wall of the pleura and become covered by it (fig. 133). They are quite small before birth, but when the new-born baby takes its first breath, they suddenly expand. The atmospheric pressure distends them to the limit. They fill every bit of available space and never cease to fill it as long as we live.

The space in the thoracic cavity on each side changes shape and extent constantly as we breathe and twist our bodies about in work and play. The lungs change their shape and extent in exact and perfect correspondence with changes in the thoracic wall. They are very extensile and elastic, and are always stretched to the limit by the air pressure. This presses them against the wall just as the inner tube of an automobile tire is pressed by air pressure against the outer casing. But the lungs are not a simple inner tube. That would not give enough surface for the necessary exchange of oxygen and carbon dioxide between blood and air.

The exchange needs an enormous surface. The lung gets this by forming tiny balloons, each connected with the airways, something like a bunch of currants on the stem (fig. 134). Each tiny balloon is about $\frac{1}{25}$ inch in diameter. There are 6,000,000 of them in the two lungs. Their aggregate surface is more than 700 square feet. They are tight up against one another. They leave space only for the branches and twigs of the air tubes coming off from the trachea (bronchi) and for the blood vessels. The business of the lung is to bring air and blood capillaries together. That is done in these little balloons. Air tubes lead air to and from them and pulmonary arteries and veins lead blood to and from them. These together fill all the space.

The balloons expand when the chest expands; atmospheric pressure makes them. They contract as the chest contracts, because their delicate walls are elastic. These walls are so thin that their structure can hardly be seen clearly even with the strongest microscopes. Anatomists are still of different opinions about this structure. Some say there are no walls except a delicate network of the tiniest elastic fibers condensed into a ring round the stem of each. There is a thin layer of fluid on the inside of the wall. The oxygen and carbon dioxide are dissolved in it.

Fig. 135.—Section through air sacs of the human lung, showing only the blood capillaries. At "a" the section passes along the surface of a sac. (From Bailey and Miller, Histology, William Wood and Company.)

But if these tiny balloons have no proper wall of their own, the blood capillaries give them one. A network of capillaries surrounds each, and the network is so close that the meshes are not as wide as the capillaries (fig. 135). The capillary walls are incredibly thin —thinner than one of Michelson's interferometer lines, among the thinnest things man ever made.

They are only $\frac{1}{30,000}$ inch thick. Fluids with oxygen and carbon dioxide in solution pass through them so fast that in the few seconds while the blood hurries through them, it gives up nearly one-half its total load of carbon dioxide and takes on about one-half its maximum possible load of oxygen. The exact number of seconds the blood takes to go through lung capillaries is not known but can be inferred from the fact that in twenty-three seconds the blood makes a complete round of the body.

If enough carbon dioxide is not taken out, then there is too much in the blood. Away up in the brain is a sample and control station. If the blood coming to it has even a little too much carbon dioxide, the control station speeds up our breathing, whether we wish to breathe faster or not. The speed and delicacy of the mechanism can be easily tested. When a person stops breathing the carbon dioxide stays in the blood and goes to the brain. When I try to hold my breath, I find that the automatic sample station takes control of breathing away from me in 45 seconds. How many seconds can you stop breathing? Try it.

The branches and twigs of the air ways inside the lungs are all elastic. Each gets longer when we take in a full breath, shorter when we breathe out. They cannot collapse because there are irregular masses of cartilage around them (fig. 119, March number). The ciliated lining which sweeps away dust extends down to twigs $\frac{1}{25}$ inch in diameter. There it stops. Beyond that, the lining is too thin to be clearly seen. Any dust that gets further cannot be swept out. This seems dangerous, for there are germs in dust and sometimes we cannot help breathing it. But if germs get so far as to reach the tiny balloons there is a surprise for them. Inside each are a number of loose phagocytes. The phagocytes are hungry cells, or watch dog cells. They eat up the germs and the dust and carry them away by means of the lymph vessels as was described in the February lesson.

The twigs of the air tubes are surrounded by a sleevelike network of plain muscle fibers. These help press the air out. They extend down to the finer twigs and are especially thick on the fine ones—like a thickened cuff on the end of a sleeve. These cuffs regulate the amount of air getting into each part of the lung and insure even distribution. They can shut up some ways entirely. In asthma they do shut up too many, even though we can breathe after a fashion with only one twentieth of our lung tissue. This arrangement is much like that on arteries, where, as we have already seen, there is also a thick cuff at the end of the sleeve of smooth muscle covering them. Keith calls these cuffs stopcocks. The name is good, for they can shut off air from parts of the lung and blood from parts of the body.

The right lung is bigger than the left, and its air tube is bigger and also more directly in line with the trachea (fig. 119, March number). Because of this more dust and germs go into it. Diseases caused by germs coming down the air ways, like croupous pneumonia, are more common on the right side. This disease affects right and left lungs in the proportion of 10 to 7.

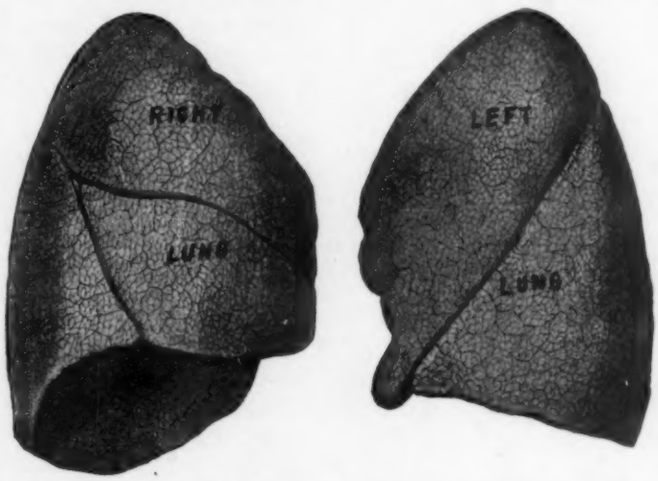


Fig. 136.—The lungs; both are shown as though viewed from the side. (Modified from Toldt, Human Anatomy, Macmillan.)

The tiny balloons are massed in groups. These groups are pear shaped near the lung surface, the big end being out. That is the only way they could be packed. In figure 136 the outlines of these tiny pear shaped groups can be seen everywhere on the surface of the lungs. In the interior of the groups they are irregular in shape. It is clear that when the lungs are expanded to the fullest extent the air tubes in them will separate like the rays of an opening fan (fig. 119). That allows the tiny balloons in the heart of the lung to expand. They never have a chance except with the deepest breathing. If we do not use them at least occasionally they will degenerate and become diseased. Therefore all children and adults should use their lungs to the fullest extent several times each day.

It will be noted (fig. 136) that the lungs are divided into lobes, three on the right side, two on the left. The lobes are separated from one another by infoldings of the lung cover, or pleura. The pleura secretes a lubricating fluid and thus facilitates lung movements. Friction would hurt; it is the cause of pain in dry pleurisy. In full expansion of the chest the upper lobe moves forward and the lower lobe moves downward. So their separation from each other facilitates expansion, for it allows each to go its separate way. The middle lobe on the right side is near the heart. The lung is constantly accommodating itself to the changes in size of this restless neighbor. It can do so easily, for nothing in the body is more easily compressible than air.

On superficial observation it would seem that fishes and men breathe in totally different ways. Fishes breathe water; we breathe air as a gas. The difference is more apparent than real. In both cases the oxygen of the air is taken up and carbon dioxide given off. The fish can take up only such oxygen as is dissolved in the sea water. The only oxygen that we can take up is that which dissolves in the thin layer of fluid which lines the walls of our tiny air sacs. The sea serves the fishes; it dissolves oxygen and carries it to the blood capillaries in their gills. Coming up out of the sea, land animals have brought with them this thin layer of fluid deep in their lungs, where it does not dry up as it would on the surface. This thin layer of fluid serves us just as the sea serves the fish; it carries oxygen in solution from the air to our capillaries and it carries out the carbon dioxide, which body metabolism produces.

Cancer of the Stomach and Bowel

By Francis Ashley Faught

IF YOU possessed information that might save a person's life, would you not be willing to do everything in your power to give him due and timely warning? This is the position of the medical profession today in the matter of the public and cancer. There is today enough knowledge in the possession of competent doctors to prevent one third of the deaths that now occur from this disease provided only that this information could be universally applied—but you, the public, will not listen.

Mortality Second Only to Heart Disease

Cancer is the modern scourge of mankind. It takes a larger toll in pain, disability and death from the adult population than any of the diseases to which human flesh is heir, save heart disease; and the death rate from cancer is increasing. It has advanced 60 per cent in the last twenty-five years, so that it is now estimated that at least 110,000 persons die from cancer in this country each year, while at this moment there are at least 300,000 active cases of cancer in the United States. This means that on the basis of our present population one woman in every eight and one man in every eleven past the age of 40 will die of cancer.

You can, if you will, help to arrest this ever-increasing death toll and assist in turning the devastating tide. "But," you say, "since we do not know the cause of cancer, what is the use?" How about electricity? We do not know what it is, but we have learned to control it? It is the same with cancer. The physician can recognize it and given an opportunity he can control and cure it.

There is good reason to believe that what has been accomplished in the last twenty-five years in the control of tuberculosis can be duplicated in the case of cancer, provided only that the public and the medical profession can be made to absorb present knowledge and apply it. But the application must be universal if satisfactory results are to follow. You cannot be blamed for what you do not know, especially regarding matters outside of your usual activities, but you can and should and will be blamed if, after having received trustworthy information, you refuse to be guided by it. Any other course savors of criminal negligence.

Generally speaking, deep-seated cancers are more difficult to recognize than those on the surface, but this difficulty becomes more apparent than real as medical science devises improved methods of diagnosis. Careful physical examination and the use of the stomach tube to determine disturbances in the stomach, while they are valuable measures, are not always sufficient. No examination that has for its purpose the detection of the possible presence of cancer in the digestive tract is complete without a thorough x-ray study. Such an examination is reliable to a high degree in detecting those disturbances of function and evidences of obstruction or pressure effects which, combined with a careful history of the symptoms leading up to the examination, will lead to a correct diagnosis in most cases. Unfortunately, a great number of persons when they reach the x-ray specialist find that the cancer has reached a stage at which involvement and extension are so great that even the most radical measures fail to accomplish a cure.

One Fourth of All Cancers in This Region

American statistics show that 25 per cent of all cancers occur in the stomach and bowels. Of the symptoms of cancer of the digestive tract it may truthfully be said that none are characteristic of the beginning of this disease. Any symptom or group of symptoms arising in the stomach or bowel may be cancer; therefore all should be thoroughly investigated at once. In no other way may we hope to detect early cancer in this region at a time when it is in the curable stage.

Cancer of the stomach is the most common clinical type of

cancer. About one third of cancers in men and one fifth in women are in the stomach.

Statistics show that most of stomach cancers occur after the age of 50 years, although 20 per cent are found in patients between 40 and 50 years and 10 per cent in those under 40. About 75 per cent of the cases occur in men. The chief symptoms are pain and gaseous indigestion. Loss of appetite, loss of weight, slight anemia and weakness appear. Any middle-aged person, particularly of the male sex, who experiences any of these symptoms should suspect that they may be due to cancer of the stomach, and complete studies should be made at once to verify or disprove the belief.

Bowel Symptoms Develop Late

Cancer of the colon or large bowel occurs less frequently than cancer of the stomach. From the standpoint of curability, this is the most favorable situation in the digestive tract. Unfortunately, the late development of symptoms with consequent delay in seeking diagnosis makes early diagnosis of cancer in this region difficult. Any abnormal symptoms referable to the lower bowel or any derangement of the normal functions of this organ should be investigated. Such symptoms as constipation, diarrhea, flatulence, distention, colic and bleeding are so common that they rarely suggest cancer to the untrained person, although these are the very symptoms that call for an examination.

As we proceed downward in the digestive tract the early symptoms of cancer become fewer and less evident. The presence of cancer in the rectum is compatible with a perfect state of health for a considerable period of time. Hence one should never ignore any vague and indefinite discomfort in the lower part of the back or in the lower abdomen, especially if it is associated with an increasing tendency to either constipation or diarrhea. These are the only early symptoms, and they often alternate in the same person. Loss of weight and definite pain and bleeding from the bowel are not early symptoms and should not be waited for.

There is always a wrong and a right thing to do under any circumstances. This is terribly true of cancer. The right thing to do is to consult a medical doctor upon the slightest suspicion or suggestion that the symptoms experienced or the signs discovered indicate cancer. If every one would do this, the majority would be relieved to find that they did not have a cancer, while the others would take the surest road that the world offers today to be cured. Any other course is wrong. It is wrong to wait to see what happens. It is wrong to postpone examination until more definite symptoms arise. Such a course may permit the disease to become incurable. It is also wrong under any circumstances to be persuaded to try any local remedy or take any variety of internal treatment in the hope that it will favorably influence the disease. There is no known method of treating cancer successfully by drugs, serums, pastes or other local applications. It is wrong to consult a quack or any one who declares himself able to cure or influence cancer favorably by any simple means. If there were any such, the reward of $100,000 that has been offered for a safe medical means of treating and curing cancer would not still be posted. Failure to appreciate these facts has caused the unnecessary sacrifice of innumerable lives.

There is no better means of finding cancer early than the periodic health examination, which should be made twice a year after the age of 35 years. If it is done thoroughly many precancerous conditions can be corrected, or cancer may be discovered in an early and curable stage.

Successful treatment must completely destroy or remove the disease. No trace may be allowed to remain. Cancer can be destroyed only by the use of radium or the x-rays. It can be removed only by surgery. Many successful cures are accomplished by a combination of these three methods. The particular method to be employed must be determined by a study of the individual case. The earlier the diagnosis the less the destruction of tissue necessary to eradicate the growth.

Facts All Should Know

The following are important truths that every one should know. Cancer begins as a single spot and is at first always a local disease; as such it is removable and permanently curable. Cancer, when once begun, never dies out of itself but continues to grow until it destroys the life of the person in whom it grows. Cancer is not a blood disease; it is the abnormal growth of normal cells of the body. Cancer is in no way infectious or contagious. Cancer chooses to attack diseased rather than healthy parts; therefore, cancer may be considered in some instances a preventable disease. Precancerous conditions are those which are not yet cancerous but which become cancerous or tend to become cancerous if neglected. Chronic irritation is a definite precursor of cancer. There is no safe, simple serum, drug or other remedy for the cure of cancer. Surgery, the x-rays, and radium, singly or combined, are the only known methods of treatment. The periodic health examination is a valuable preventive measure against cancer.

"April's coming up the hill"

A children's garden in California. Everything, even the paths and bridges, are of miniature size. Little gnomes dwell there and perhaps fairies, although no fairies were in sight when the photographer entered.

Below is Pepe Gallostra, a 3-year-old globe trotter. He is the son of the new secretary at the Spanish embassy in Mexico City, who has represented Spain in France, England, Norway, Switzerland and Italy.

Spring has really come when vacant lots resound with the whack of the baseball bat.

Photos by Wide World

Health, as well as fame, belongs to Paulina Longworth, little daughter of the Speaker of the House and Mrs. Alice Roosevelt Longworth.

Harris-Ewing

A Chinese sprinter is Nelson Lun, who at the age of 11 is the school champion. He also excels at baseball and handball.

Wide World

Spring has brought the wanderlust to this young Alabaman. He has packed his cherished possessions in a trailer and is setting out in his high-powered car to see the world. He'll be reminded of home about dinner time.

Wide World

Fads *and* Facts *about Diet*

By
Russell S. Boles

Louis XIV refused to drink the new beverage and forbade its use. With his daughters, however, it became popular, and the royal household coffee bills amounted to $15,000 a year.

THIS is the age of cults and fads, and the faddist finds just as fertile a field in telling us what we should eat as in attempting to make us beautiful or young, or anything else that we are not and that Nature never intended us to be. Rejuvenation is simplicity itself in the hands of the beauty specialist and the food faddist!

In discussing diets, I would begin by dividing all foodstuffs into three main groups: proteins, carbohydrates and fats. In addition to these substances the body requires water, vitamins and certain minerals such as iron, calcium and phosphorus.

The Three Food Groups

The protein foods are utilized for building up the body tissues. They comprise meats, fish, eggs, cheese, milk and such vegetables as peas, beans and lentils.

The carbohydrate group creates energy and heat for the body. In it are included the fruits, vegetables, sugars and starchy foods such as bread, potatoes, rice, macaroni and cereals.

Fatty foods are likewise required to create heat and energy. Those chiefly used are cream, butter, olive oil, nuts, and fatty meats and fish.

The minerals required by the body, such as iron, calcium and phosphorus, are found in milk, cheese, egg yolk and many of the vegetables, particularly lettuce, asparagus, spinach, cauliflower, peas, beans, tomatoes and carrots. The major part of our diet should be made up of the vegetables, fruits and cereals. Their food value lies in their carbohydrate content and in their vitamins and mineral salts. The cellulose they contain furnishes the bulk, so essential for proper function of the intestinal tract. This principle is exaggerated today, however, because of the popular roughage fad.

Vegetables, fruits and salads contain much cellulose, and for this reason, if for no other, they are required in reasonable amount in the daily menu. But we are besieged from all quarters to eat more roughage. Bran was the forerunner of this fad. While bran has some food value because of its vitamin content, its indiscriminate use as roughage to stimulate intestinal peristalsis is not to be recommended. An excess of roughage, because of its bulk, does not permit the ingestion and assimilation of other foods necessary in securing a well balanced diet. Furthermore, much of the constipation seen today is of the spastic type, in which there exists irritability and spasm of the bowel. Obviously, in such cases too much roughage aggravates

the condition, since the excessive stimulation increases the irritability.

The cooking of these foods has always been considered necessary in order to render them more digestible and more palatable. In addition to this, cooking destroys many bacteria and parasites or their eggs that might otherwise produce disease. Of the various methods of cooking, steaming is preferable because the minerals are retained and the vitamins are less affected.

Vegetable Proteins

In devising a diet it must be remembered that vegetables are low in protein and high in vitamin content, and for this reason should be combined with foods rich in protein. However, a few of the vegetables, such as peas, beans and lentils, contain a considerable amount of protein, which is utilized just as effectually, though perhaps not so quickly, as the animal proteins. Acid-forming foods such as meat and eggs should be combined with the alkali-forming vegetables and fruits so that a proper acid-base balance may be maintained in the body.

Because of their supposed indigestibility, vegetables are frequently forbidden in diseases of the stomach and intestines. In my opinion, their too rigid restriction is productive of more harm than good. This point must be seriously considered in light of the fact that definite pathologic changes are noted in the gastro-intestinal tract as a result of the vitamin and mineral deficiency in low vegetable diets. Recently this line of reasoning has been employed in explaining the cause of gastric and duodenal ulcer.

One of the popular fallacies entertained by the public at large is that concerning acid fruits. Acid fruits have long been considered harmful in so-called acid conditions. It should be better understood that, although fruits contain much acid, their acids are quickly converted into alkali in the process of digestion. Consequently the alkalinity of the blood is increased, and hence so-called acid states (acidosis) are relieved by the use of fruits.

Of Little Importance How Eggs Are Cooked

The first of the staple food products that I shall discuss is eggs. They are rich in animal protein, and the yolk, particularly, contains a generous amount of fat-soluble vitamin and cholesterol. In most digestive disorders eggs are well tolerated. There are but few contraindications to their use. Because of their high animal protein content, they should be avoided in intestinal putrefaction and other conditions in which such proteins are harmful. Because of the amount of cholesterol in the yolk they should be restricted in all cases of gallbladder disease, especially if stones are present, and in pregnancy, as in these conditions the blood and bile already contain too much cholesterol. Contrary to popular belief, the manner of cooking eggs is of little importance. Healthy normal stomachs digest eggs hard boiled and fried almost as readily as in any other form. In acute inflammatory conditions of the stomach or intestines, however, eggs are digested more easily when poached, coddled or soft boiled.

The diet faddist tells us that vegetarian animals are strong, large, long-lived, placid and reposeful. Therefore, man should abstain from meat.

When Meats Should Be Avoided

Meats are another of our indispensable foods. They contain a high percentage of animal protein and some of them a goodly amount of fat, but they contain practically no vitamins. Because of their protein content, they are strong stimulants of gastric secretion. For this reason they should be avoided in hyperacidity or hypersecretion. As meats require longer digestion than any other food, their use should be limited in all cases in which there is any delay in the evacuation of the stomach.

Because they greatly encourage intestinal putrefaction meats should be avoided when there is a tendency to intestinal stasis and toxemia. They are of doubtful value in cases of achylia gastrica or atrophic gastritis, conditions in which the acid of the stomach is absent or very low. Meat broths and consommés might be of some benefit in low states of digestion and secretion because of their local stimulating effect, but they possess no food value, and hence their use should be greatly limited.

Of the beverages in common use today coffee claims our first attention. Let us briefly refer to its history, which is interesting. It was not

originally used as a beverage, but was ground up, mixed with lard and oils and used as a food. It appears that the plant was originally of African origin and must have been used there from time immemorial. It is not mentioned, however, in the history of the Jews or of the early Greeks or Latins. It seems to have been introduced into Abyssinia about the year 875. Five hundred years later it reached Arabia, and from there was introduced into Turkey, Persia, Asia and other countries. About 1640, it evidently first appeared in Great Britain and America, and since that time it has enjoyed an increasing popularity. In Arabia the coffee plants were so jealously guarded that the exportation of a single one called for the death penalty. What little coffee could be smuggled out of the country was bought at a price of from $25 to $30 a pound. Naturally only the wealthy, especially royalty, could sip of it.

"Seminaries of Perdition"

Its early use in England provoked much righteous indignation—similar to the present day agitation about alcoholic beverages. Eventually laws were passed in an effort to curb its use and it became a misdemeanor to lounge in the coffee houses, referred to at that time as "seminaries of perdition." The coffee houses were padlocked—even as today—but coffee marched victoriously on. In 1667 it arrived in Paris and Louis XIV became so perturbed that he refused to drink the new beverage himself and forbade its use. With his daughters, however, it became extremely popular, and it is recorded that the royal household coffee bills amounted to $15,000 a year. How history does repeat itself! Well, coffee is not so bad, nor yet is it so good, except to the palate. It causes a slight increase of gastric acidity, but need not be forbidden on that account. In any but very moderate quantities it is harmful because of its stimulating effect on the brain and nervous system, and therefore it should be forbidden in all functional disorders of the digestive system. It may be mentioned here that probably in 75 per cent of the patients with digestive complaints the trouble is of a functional nature—that is, there is no organic disease within or outside of the gastro-intestinal tract that is causing the symptoms.

Tea has physiologic effects similar to those of coffee. In addition it contains tannic acid, an astringent to be avoided in constipation.

Cocoa and chocolate are rich in fats, and for this reason cause distress in slowly emptying stomachs and in diseases of the gallbladder.

Milk is, of course, one of the most nutritious foods we possess, being both a food and a beverage. It contains fat, carbohydrate, protein, minerals, vitamins and water. In its natural state it comes in for little criticism, but the source of supply and the method of handling until it is consumed afford many opportunities for its contamination. Because of this risk raw milk is not extensively used. To guard against the carrying of disease, milk is subjected to heat in various ways. While this treatment may render it less palatable it does not impair its nutritive value to any serious extent, except in the case of evaporation. As a result of this process, however, a fairly large portion of its vitamin content is destroyed. Temperature and aeration are the important factors in determining the degree of vitamin destruction, and in modern commercial pasteurization the effect of these factors is reduced to a minimum.

A popular misconception is that the curdling of milk in the stomach is evidence of indigestion. This is a perfectly natural process. Milk forms in small curds a few minutes after it enters the stomach, and these gradually coalesce, forming a large curd which is suspended in the whey. As digestion progresses the curd is gradually reduced to a turbid, milky fluid in which state it is absorbed. Boiled milk yields the smallest curd, raw skimmed milk the largest. The latter curds are the harder because of the small fat content. In digestive disturbances hard curds are not well tolerated, and to prevent them sodium citrate, sodium bicarbonate or cream is added to the milk. Peptonized milk is indicated only in achylia or chronic gastritis, in which conditions the normal ferments, rennet and pepsin, may be lacking. It may be helpful, however, in certain cases of hyperacidity, in which a large curd quickly forms and causes discomfort.

Cultured Milks

Of the cultured milks, the acidophilus product enjoys the greatest vogue today. This is because the *Lactobacillus acidophilus,* and not the *Lactobacillus bulgaricus,* which was previously used, is a normal inhabitant of the large intestine. The cultivation of this organism in the intestinal tract by drinking the cultured milk or taking the culture in other forms is an effective measure in reducing intestinal putrefaction and toxemia. This, however, can be accomplished just as readily by administering milk sugar or lacto-dextrin and by withholding all animal proteins from the diet. Milk should never be given in large quantities at one time because of the excessive curd formation, and in cases of impaired digestion, as has been said before, it should be boiled or alkalinized.

We hear a great deal today about vitamins. Our knowledge of these elusive elements is young—perhaps fifteen or sixteen years—and meager. They have, of course, existed through the ages, but it was not until 1913 that Casimir Funk gave them their name and admitted them to scientific standing in our food family. In 1857, David Livingstone, while in Africa, noted

that disease conditions of the eyes occurred in the natives who were subsisting on greatly restricted diets. Some thirty years ago attention was called to the fact that beriberi, or polyneuritis, developed in persons living largely on polished rice and that it could be prevented by eating unpolished rice. These mysterious events we now know were due to lack of vitamins in the diet. Of late years, as the result of brilliant experimental work, it has been determined that a diet low in vitamin content produces various so-called deficiency diseases. Beriberi, scurvy, xerophthalmia, rickets and pellagra have been mentioned as specific instances of vitamin starvation. It is probable, however, that the lack of vitamins in some of these conditions is merely a contributing factor.

It appears to be well established that vitamin deficiency also contributes in no small measure to the development of chronic catarrhal conditions of the stomach and intestines. Ulcer of the stomach and duodenum has recently been studied from this standpoint, and in the eyes of some clinicians a low vitamin diet is considered an important predisposing cause of such ulcers. Probably the most recent work in the study of vitamins and the most interesting is in connection with sterility. This investigation has shown that fertility in animals is definitely influenced by controlling the vitamin content in the diet.

The "pineapple juice-lamb chop" lady meets a friend with old-fashioned curves.

The vitamins have never been isolated and they cannot be measured in any definite manner. The amounts required by the body can therefore only be arbitrarily determined. While they are quite resistant, we know their potency is diminished by cooking, and in the case of water-soluble vitamin C by the action of alkalis. A practical example of the latter is afforded by the addition of soda to the water in which vegetables are cooked. The soda helps to improve the complexion of the vegetable, however, and consequently the housewife is for it. The vegetable must be a pretty shade of green —and so the vitamins must go! For the same esthetic reason sugar and flour must be a pretty white, with the result that the pig and the cow reap the benefit by being fed the bran which contains most of the vitamins.

If due attention is given to the fundamentals outlined, one need not worry about what to eat. The victim of the food faddist is primarily a victim of his own imagination. It more often happens that the concern one exhibits over what to eat causes more indigestion than the food itself. Persons of a nervous or neurotic temperament will frequently blame some food or combination of foods for an attack of indigestion, whereas their frame of mind was the real cause of the trouble. Individuals of this type frequently so reduce the amount and variety of their food that they suffer from malnutrition.

A product of entirely different reasoning today is the young lady aspiring to the slender figure. Heaven only knows where the rhyme or reason lay for such a fashion! The form of a Juno may not reflect good health, but at the same time the diet of her sylphlike sister of today is a poor pattern to fashion after. Curves were once a mark of beauty, and one must wonder whether the modern straight-line model of femininity will not soon surrender to her sister of more graceful lines. Most of the modern weight-reducing diets and obesity cures that are indiscriminately handed from one person to another indicate a complete indifference to or ignorance of their consequences. Those regimens that include the use of medicines are particularly to be condemned, unless of course they are prescribed by a physician.

In considering this matter from a scientific standpoint we realize that of necessity obese patients must often be placed on very low diets in order to get rid of their surplus fat. When this is necessary, an estimation of the total metabolism is held to be important, in order to determine whether enough carbohydrate calories are being taken to balance the increased metabolism of fat.

We know, furthermore, that in patients seriously ill there is usually a marked voluntary restriction in the diet. Low diets in such instances are made necessary because of the loss of appetite, nausea and general repugnance for food. Under these conditions a temporary rest for the stomach produces no ill effect, but metabolism is not resting. The exhaustion of glycogen in the muscles and liver is rapid and there soon results a state of ketosis, the symptoms of which are familiar—weakness, nausea, coma and deep labored respiration. The evil effects of starvation are thus added to those of the disease.

Essentially, the same sequence of events occurs when the diet is voluntarily and unscientifically restricted, except that the degree of ketosis that develops may be of a mild form that may

readily escape detection. This condition may be suspected when a person on a low diet complains of weakness, fatigability, both mental and physical, and a lack of resistance to infection. When the condition is severe, as in cases of serious illness, a skilful nurse can usually administer some kind of food. She will do well to remember that carbohydrate foods are the most important under the circumstances, as they will best replace the rapid loss of glycogen in the muscles and liver that has occurred and will limit the destruction of body protein. The administration of protein foods ranks next in importance, and of fats last, because the human body has large supplies of fat to draw on for many days. When the carbohydrate cannot be given by mouth as in some severe illnesses, it may be administered in the form of glucose, by vein or rectum.

Weight Reducing Often Health Reducing

Indifference to the dietetic requirements of the body slowly but surely invites disaster. Promiscuous weight-reducing diets and foods are just as certainly health reducing. Nature has provided us with a bountiful variety and amount of all foods, and a person may alter his or her weight at will without endangering either health or beauty by a skilful and scientific arrangement of diet. The "baked potato-glass of milk lady" and the "pineapple juice-lamb chop lady" eventually seek the physician's advice, perhaps not for a diet but on account of shattered nerves, threatened tuberculosis or some other ill that a denied nature visits upon them.

For many years the subject of a vegetarian diet has been under discussion. The exclusion of animal food from the diet, either partially or entirely, is an age-old practice with many peoples. It has been estimated that three fourths of all mankind in all known periods of time have been practically vegetarian.

The proponents of such a diet argue that man is not anatomically equipped to deal with animal foods, that from the teeth to the bowel his gastro-intestinal tract bears no resemblance to that of meat-eating or carnivorous animals. We are told that meat-eating animals are nervous and stupid, that they are prowlers and short-lived, whereas vegetarian animals are strong, large, long-lived, and that they are placid and reposeful like the elephant, horse, rhinoceros and goat. Much of a serious nature does, however, argue well for vegetarianism.

The majority of Americans derive only from 15 to 20 per cent of their calories from protein under ordinary conditions. The investigations of DuBois and others show that, contrary to popular belief, protein metabolism does not increase with exercise. The feeding of large amounts of protein is, therefore, illogical, even for those leading an active, strenuous life.

A high protein diet or a diet composed largely of animal foods appears to favor the development of many of the chronic diseases of today, especially such gastro-intestinal diseases as ulcer, colitis and chronic appendicitis.

The Model Diet

The sensible attitude to take in this matter is that, if health is to be maintained, one must eat a well balanced diet, selected from all the foods at his disposal. The amount required should vary according to the age, sex, weight and activity of the individual. The diet should vary from day to day, but there should not be too much variety at a single meal.

The model diet should be a composite of all the diets that have been tested by human experience and found to have merit. As a result of extensive scientific research, we are enabled to select the best features from all diets, and thereby design a diet that is nutritious, economical and palatable. It should include all the vegetables, fruits, salads, bread and cereals, milk, eggs, butter, cheese and a limited amount of meat. Any radical departure from this composite diet, unless it is for a short period of time, is likely to be harmful.

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Plain Facts about Health and Disease

MENINGITIS

CEREBROSPINAL MENINGITIS in a new and virulent form appeared in different parts of our country during the latter part of 1929. Starting in the teeming centers of the Orient, it has followed the lines of transportation eastward to the Philippines, to California, the Middle West and East. In the central states, at Indianapolis, there were eighty-five patients with a high mortality. Treatment with previously prepared specific serum was not effective and investigators are utilizing every effort to produce a specific serum against this new enemy.

The disease, however, has not reached such proportions as to offer as much hazard to the average person as ordinary motor traffic. Actual facts about the number of cases were greatly exaggerated as is usual in outbreaks of infectious diseases. Wholesome publicity helps the general morale, but there are those who mistake the fight against the epidemic as the epidemic itself. An orgy of senseless gossip gains momentum as it rolls along.

Cerebrospinal meningitis is caused by the germ *Diplococcus intracellularis-meningitidis,* which attacks the tissues of the brain and spinal cord. The symptoms at first are much like the head and bone aches of the common cold or influenza, going rapidly into a violent pain at the back of the neck and down the spine. The back becomes rigid. As the infection develops vomiting ensues, shivering rigors appear and go on to convulsions. Often a rash is noted on the face and body, giving the malady the name "spotted fever."

Meningitis occurs more frequently in the fall, with the spring season next; children between 5 and 10 years are more often affected than adults and the highest death rate is under 2 and above 40 years of age. Fortunately it develops in a relatively small number of exposed persons. Its appearance in sporadic rather than epidemic form is due largely to the application of the principles of modern sanitary science, including particularly isolation of the sick. Outbreaks exhibit varying degrees of virulence and they may be caused by one of several types of the germ. This is important to the physician who must employ, in treatment, the special serum for the particular type of organism concerned in the case he is treating.

Informed persons know that their efforts should be directed toward minimizing fatigue so that individual resistance to infection may be safeguarded. Should the germ enter through the membranes of the nostrils action is rapid and in a few cases the patient is in serious condition before a proper diagnosis can be made. Recoveries are in direct proportion to the time the treatment is begun.

Health authorities isolate patients and examine the nasal and throat secretions of exposed persons. They wish particularly to detect the "carriers," who are apparently healthy but who harbor germs that may be transmitted to persons whose lowered resistance offers a fertile field for developing the disease.

PROTECTION OF CHILDREN FROM ROUNDWORMS

THE roundworm, or eel worm, is known scientifically as *Ascaris lumbricoides.* It is paler than the common garden worm, being light pink or yellowish, and it grows to be a foot or more in length. Linnæus first described it in 1758. Since then it has been recognized as a nuisance to those whose intestines it adopts for habitation. In children especially it causes symptoms, such as paralysis, twitchings and convulsions. Its presence in the stomach or intestines often leads to more or less serious digestive disturbances.

Within the last ten years authorities on worms have discovered that roundworms do most serious damage to the lungs. When the eggs of this worm are swallowed, the embryos that lie curled up within them hatch out in the small intestine. The tiny larvae, as they are then called, begin a remarkable tour of their hosts' bodies. Being only about one hundredth of an inch in length, they are able to make their way into the minute veins or lymph ducts in the wall of the intestine. By either of these paths they soon reach the liver. Thence they find their way along the larger veins of the liver to the right side of the heart and then to the lungs. In doing this they may cause serious hemorrhage and may open a pathway for invading bacteria. They find their way back to the mouth through the breathing tubes, often being helped, no doubt, by a little cough; then they are swallowed down into the stomach again.

The discovery of this itinerary with its serious effects on the lungs has made the problem of preventing human infestation a more important one than it was thought to be. Certain workers from the school of hygiene of Johns Hopkins University, working under the auspices of the National Research Council and aided by a grant from the American Child Health Association, determined to find out how the worm eggs get into human mouths in the first place. Infestation with these worms is common in many parts of the United States. They selected for their research a county in Virginia in which the health department was well organized and enthusiastic in its cooperation. The climate also is warm and moist, which provides an ideal combination for the propagation of these worms. The stools of some 2,000 persons were examined for *Ascaris* (roundworm) eggs. Sixty per cent of the children and 30 per cent of the adults examined were harboring the worms. The mothers of small children were found to be more heavily infested than other adults. The explanation of this was presumably because they live in closer contact with the children.

It has been taught that a polluted water supply may be a source of infestation and the wells were tested, but in Wise county, Virginia, the wells were not found to be responsible. The infestation was heaviest in places in which the people were not provided with privies or other sanitary conveniences. However, it was found that in some homes that had good privies the children still suffered with roundworms. When the soil around these homes and under the porches was examined, it was found to contain *Ascaris* eggs and often to show contamination with human excreta.

Further investigation showed that although the adult members of the family were availing themselves of the new sanitary equipment they had not taught the younger children to do so. As a result the soil around the house was contaminated and the children of the home, as well as the neighbors' children who came to play there, became infested with the worms. This shows that the installation of modern privies or sewerage is not, by itself, enough. Family discipline of habits is also highly important.

PLEASE PASS THE ROUGHAGE

ROUGHAGE in our foods is largely cellulose, but it also contains mineral salts, vitamins and buffers. According to discoveries of the past several years the leaves and roots of plants possess these substances to a high degree. Cato spoke in high praise of garden cabbages as food; Linnæus, the celebrated Swedish botanist and physician, as well as Darwin, believed that the teeth and digestive organs of man were not intended to digest animal food, and Cuvier, the great French naturalist, said that the best diet for man is the same as that of higher apes—fruits, grains, nuts, shoots and roots. None of these men, however, thought in terms of our knowledge of these foods today.

The human being can thrive fairly well on all kinds of diets, but this is no reason why he should not take advantage of a hygienic dietary laden with benefits. It is not what we eat but what we assimilate that nourishes our bodies, and there is abundant evidence to prove that many of our diseases are due to wrong food habits.

The most frequent corrective of many wrong food habits is a greater use of fruits and vegetables. People do not realize how taste has been vitiated by eating concentrated foods and condiments, whereas the simpler foods increase the faculty of taste. Cellulose, or vegetable fiber, the structural basis of plants, is indigestible but facilitates intestinal elimination. Food is never wholly digested, and at each meal some fresh uncooked food should be eaten, for the colon requires a certain amount of indigestible material to stimulate the peristaltic motion. If roughage is omitted from a single meal, food residues will form an obstructing mass, which may interrupt the intestinal rhythm. Vegetables and fruits contain the indigestible material needed and so are the best laxative foods.

Among foods high in cellulose are bran, whole wheat, oatmeal, lentils, beans, green peas, string beans, cabbage, brussels sprouts, cauliflower, kohlrabi, celery, beets, asparagus, carrots,

spinach, tomatoes, lettuce, onions, red raspberries, cranberries and figs.

Vegetables and fruits contain the mineral matter that enters into the composition of all the tissues of the body. Minerals form the ash content of plants and 6 per cent of the body weight of human beings, and they are necessary to build up bones, teeth, blood and tissues and to insure a sound nutrition.

The most important of the minerals necessary to life are calcium, sodium, potassium, magnesium, iron, phosphorus, sulphur, silicon, chlorine and iodine. These minerals are best taken as organic salts rather than as drugs, and this is the form in which plants furnish them. A diet poor in minerals causes a craving for sodium chloride, or common table salt, which when taken in excess is detrimental to health. Salt is an excellent preservative and food too well preserved with salt retards the action of the digestive juices.

Calcium forms about 50 per cent of the mineral matter of the body, it being the principal constituent of the bones and teeth. It vies for honors with vitamin D in preventing rickets. Cabbage, lettuce, water cress, endive, onions, brussels sprouts, beet tops and figs are rich in calcium.

Sodium is important in keeping the blood alkaline and in eliminating carbon dioxide from the lungs. It is abundant in spinach, apples, strawberries, lentils and unpolished rice.

Potassium is closely related to the vital functions of the cells of the body and is predominant in muscle tissue. Baked potatoes, grapes and chestnuts are rich in potassium.

Magnesium gives flexibility to bones and elasticity to muscles. Barley, spinach and walnuts contain magnesium.

Iron is essential for the process of combustion. It is found in the hemoglobin of the red blood corpuscles and uniting with the oxygen of the lungs it is carried to all parts of the body. Spinach, lettuce, leeks, strawberries and gooseberries are rich in iron.

Phosphorus is most important for brain workers. It is found in whole wheat, unpolished rice, onions and almonds.

Sulphur furnishes the blood-purifying element, and is said to control the action of the phosphatic nerve substance. Red cabbage, carrots and cauliflower are rich in sulphur and are refreshing foods for those subject to nervousness.

Silicon is believed by some to have a powerful antiseptic action, protecting the body from infection. Whole wheat, unpolished rice and the outer layer of plants are sources of silicon.

Chlorine is present in celery, cabbage and fresh coconut. Minute quantities of iodine, fluorine, manganese, copper and zinc are also found in the human ash.

Agriculturists know that fertility of the soil depends on an adequate supply of minerals and that when plants are undernourished they are liable to all sorts of diseases. Those who have made a study of nutrition know that an adequate supply of minerals are obtained when the diet includes enough vegetables and fruits.

In addition to their store of minerals in a form best suited for utilization by the body, vegetables and fruits have been found to be a source of vitamins or accessory food substances, which are of utmost importance for growth and health. Vitamins are substances of unknown composition normally present in certain foodstuffs in minute quantity; their absence from the diet leads to definite disease conditions. Animal foods that contain vitamins are fats, eggs and milk; these should be present in the diet in adequate amount to insure normal growth and health.

Buffers are concerned in the reaction of the blood and lymph. The question of the reaction of the blood dates back to the sixteenth century when distemper was considered due to an excess of acid particles in the blood. At that time the conception of the reaction of the blood was that it contained acid and alkaline particles, while today an acid-alkali balance is the terminology.

Normally the reaction of blood is slightly alkaline and the reaction is maintained practically constant in health by acid and alkaline foods. When under normal conditions an excess of acids is poured into the blood stream, substances called buffers resist these acids by absorbing them. The supply of these buffer substances so necessary to health is maintained by alkaline foods such as fruits and vegetables. Among the best alkaline foods are beets, carrots, cucumbers, cabbage, spinach, tomatoes, cauliflower, ripe olives, parsnips, celery, rutabagas, figs, lemons and oranges.

Pavlov, the beloved Russian physiologist, is quoted as having said that "appetite juice," which is produced by stimulation of the nerves of taste by palatable food, is the most important factor in digestion. To most of us a few anchovies on a bed of lettuce and grated carrots, or slivers of ice cold carrots, celery and ripe olives would not be too insipid to stimulate the appetite juice. A gradual increase in the daily menu of health-giving foods will lead to new tastes and appetites. Before long it will be easy to agree with Heine, who said, "Our first duty is to become healthy."

Trouble *in the* Bathroom

A Children's Story
by Ida Spaeth

Bobby Lazy was a lad
Who wouldn't take his bath one night.
It made his mother very sad
And Bobby Lazy was a sight.

WHEN the Water in the bathtub saw Bobby's Mother sad, he said, "I'm going to run away. Bobby won't take a bath and his Mother is sad."

The Hot Water Heater, seeing the Water running away, roared, "Why are you running away?"

"Oh," said the Water in the bathtub, "Bobby won't take a bath, his Mother is sad, and so I'm going to run away."

"Well, if that is the case," roared the Hot Water Heater, "I'll grow cold." So he began to grow cold.

"Why are you growing cold, Hot Water Heater?" bubbled the Soap on the dish.

"Oh," said the Heater, "Bobby won't take a bath, his Mother is sad, the Bath Water is running away, so I am growing cold."

"Well, if that is the case," bubbled the Soap, "I'll slip away."

"Why are you slipping away?" said the Wash Cloth to the Soap.

"Oh," bubbled the Soap, "Bobby won't take a bath, his Mother is sad, the Bath Water is running away, the Hot Water Heater is turning cold, and I'm going to slip away."

"Well, if that is the case," said the Wash Cloth, "I'll skip."

"Why are you skipping?" said the Bath Towel.

"Oh, I am skipping because Bobby won't take a bath, his Mother is sad, the Bath Water is running away, the Hot Water Heater is growing cold, the Soap is slipping away, and I'm going to skip."

"Well, if that is the case, said the Bath Towel, "I'll disappear."

"Why are you disappearing?" dripped the Bath Brush.

"Oh, I am disappearing because Bobby won't take a bath, his Mother is sad, the Bath Water is running away, the Hot Water Heater is growing cold, the Soap is slipping away, the Wash Cloth is skipping and I am going to disappear."

"Well, if that is the case," dripped the Bath Brush, "I'll lose my whiskers."

"What's wrong with this Bath Brush?" growled Bobby's Father as he came into the bathroom.

"What's wrong!" dripped the Bath Brush in tears, "I'm losing my whiskers! You'd lose your whiskers, too, if you knew of all the trouble in this bathroom.

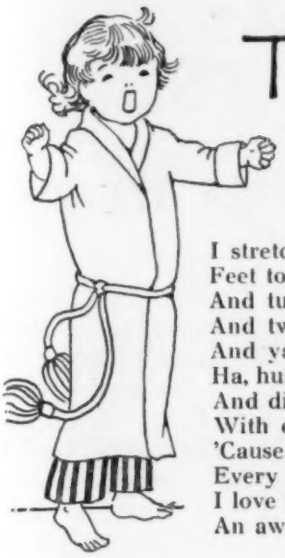
"Bobby won't take his bath, his Mother is sad, the Bath Water is running away, the Hot Water Heater is growing cold, the Soap is slipping away, the Wash Cloth is skipping, the Bath Towel is disappearing, no wonder my whiskers are falling out."

"Well, if that is the case, I'll see to that young man," said Bobby's Father. Immediately the Water, seeing what might happen to Bobby, started to run back into the tub, the Heater began to grow hot, the Soap slipped back into the dish, the Wash Cloth stopped skipping, the Bath Towel reappeared, and the whiskers jumped back into the Bath Brush.

Bobby took his bath like a little man and his Mother was glad.

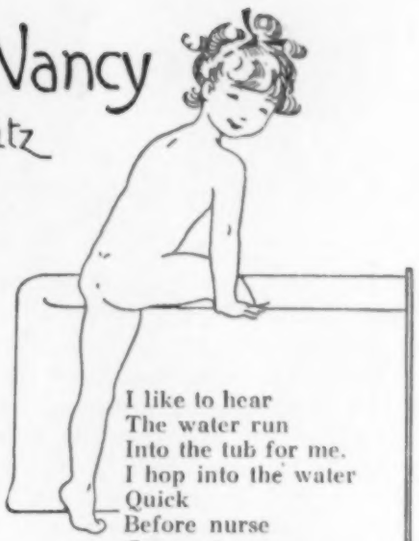
Through the Day with Nancy

Poems by Grace Ellen Glaubitz
Illustrations by Riggs



I stretch from
Feet to fingertips
And turn my neck
And twist my hips
And yawn like this:
Ha, hum—ha, ho,
And dig the rug
With every toe;
'Cause stretches loosen
Every knot.
I love to stretch
An awful lot!

My teeth are
Clever little knives
That chew my bread crusts
All their lives.
They're careful to
Chop every bit
Before I start to
Swallow it.
I brush them white
Three times a day.
They look much happier
That way!

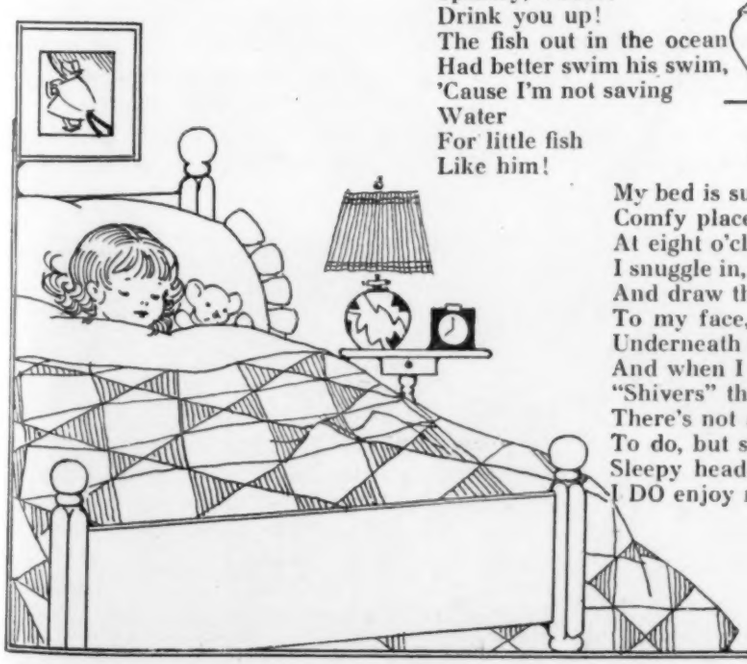


I like to hear
The water run
Into the tub for me.
I hop into the water
Quick
Before nurse
Comes to see.
I scrub and rub and
Splish and splash and
Comb my hair and
Tie my sash.
And Don and I
Both make a dash for
Breakfast—
One, two, three!

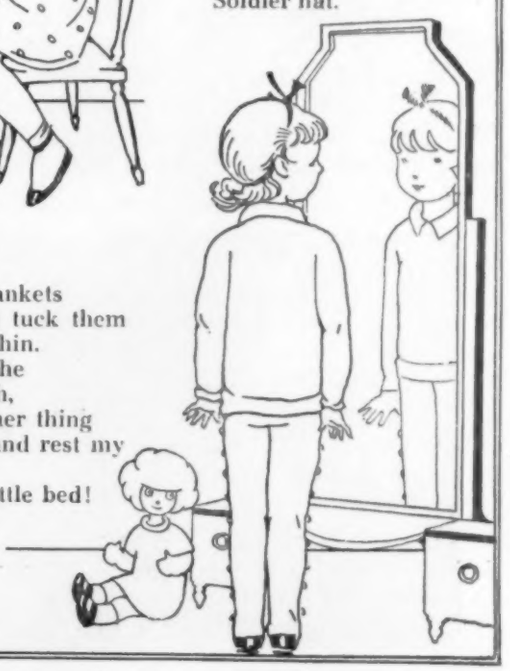
My green wool socks
Are just the thing
To wear when I'm
Tobogganing.
I never have to
Blow or snuff,
Cause I am wrapped
Just warm enough.

Splatter,
Splatter,
Water,
Jump into my cup.
You're so clean and
Sparkly, I must
Drink you up!
The fish out in the ocean
Had better swim his swim,
'Cause I'm not saving
Water
For little fish
Like him!

My sweater looks
So well on me,
Because I stand so
Straight, you see.
I hold up high
My chest and chin,
And try to keep
My tummy in.
If you can be
As straight as that,
You, too, should wear a
Soldier hat.



My bed is such a
Comfy place.
At eight o'clock
I snuggle in,
And draw the blankets
To my face, and tuck them
Underneath my chin.
And when I get the
"Shivers" through,
There's not another thing
To do, but sigh and rest my
Sleepy head.
I DO enjoy my little bed!



The Little Head Nurse

A True Story — *By THEODORA STEARNS*

SEVERAL years ago, on a cold winter day, some children were building snow forts while their mother was visiting their father, who was very ill in a hospital in a nearby city, Framingham, Mass.

Bernice, the oldest child, a girl of 16, called from the house to her 12 year old sister, "Tiny, come quickly! Bud has cut his foot!"

The younger sister ran into the house by the way of the sleeping porch, where she followed a thick trail of blood through the window and across the kitchen floor to where her little brother sat apparently taking a foot bath in a basin of blood!

In spite of the sickening shock, Tiny recalled the first aid instruction she had learned at school. She realized that with the blood gushing out at that rate her brother would soon bleed to death. For several deep gashes had been cut when Bud, in jumping, had landed on the top of a milk bottle which had split from his weight. While telling her big sister the danger, Tiny quickly placed two chairs together, facing each other, and helped the little boy up, laying him down on his back and elevating the injured leg. Then she hastily pulled off her belt and tied it tightly around the ankle and to the top of the chair. She was crying softly all the time, but was now relieved to see the foot stop bleeding. When she thought it safe to leave her brother, she went to the nearest neighbor's to telephone for the doctor, as her sister, feeling faint, had faded out of the picture.

But Tiny was greatly disappointed, for the doctor would not be back at his office for half an hour. At the quickest, he could not reach her home before an hour. Tiny went back to cheer her patient and to be sure to keep the foot from bleeding until the doctor could come. The wound was so deep that the tendons and bones were exposed. When she asked Bud if it hurt, he said, "Of course not!" and lay there as calmly as if he were in his own bed at night.

Soon their mother came. When she saw what had happened, she promptly went into hysterics. Tiny told her that the doctor would soon be there, but to all of them the minutes dragged like hours. Finally he came. As he set to work on the foot, he asked who had fixed it up like that.

Almost guiltily, the little "first aider" replied, "I did."

"How old are you?" he asked.

"Twelve," she answered.

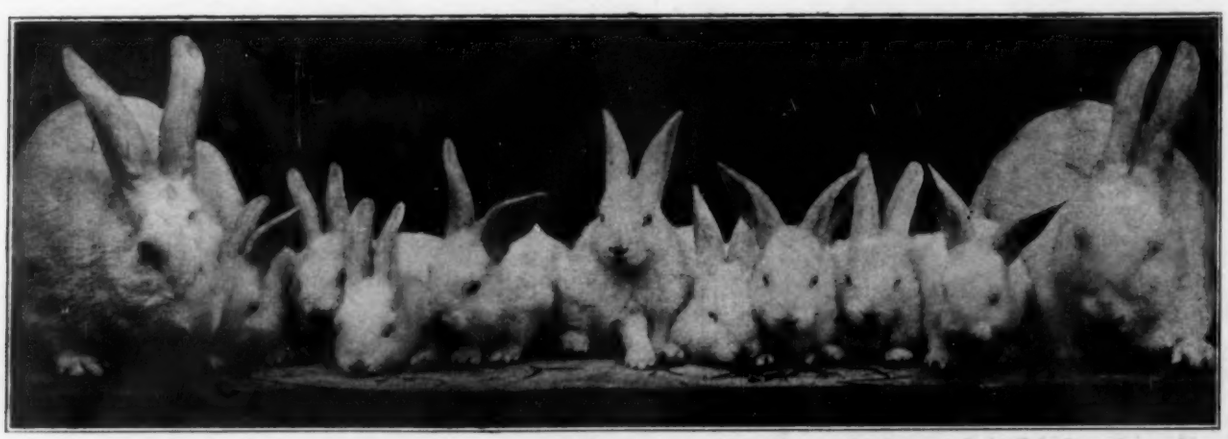
"You saved his life," he said emphatically.

The physician soon found that it would take a specialist to mend that foot, so he asked the little fellow if he would like to go to the hospital. To which the boy replied with one of his best smiles that he "sure would."

So Bud was quickly bundled into the car and rushed to a hospital, not the one his father was in, lest his father would hear of the accident and be worried by it.

Patching up the foot was quite a job for the surgeon. He took a good many stitches, and Bud spent a number of weeks in bed and on crutches before the foot was well again.

Thereafter, when the doctor saw Tiny, he always called her "the little head nurse."



These are Easter bunnies, if you like, but they are also laboratory rabbits. Uncle Sam uses them in studying certain diseases that attack boys and girls, and grown persons as well.

Marceau, Philadelphia

When Dr. W. W. Keen of Philadelphia, dean of American surgeons, recently celebrated his ninety-third birthday, a photographer was summoned to take a "family group." This included four children, eleven of his thirteen grandchildren and ten great grandchildren.

Below is a group from the Pompeian frieze that decorates the walls of the Lane Medical Library, Stanford University. This painting represents the scene described by Virgil in which the surgeon Iapes Iasides tried in vain to pull an arrowhead out of the wound. Venus appeared bearing a Cretan herb, and the arrowhead dropped out.

Pacific and Atlantic

ANCIENT GOLF, IF NOT ROYAL

In bonnet and kilt, Sir Harry Lauder plays "gowf" of a type that is purely American. The perennial Scot is said to pitch a canny horseshoe.

Underwood and Underwood

Pacific and Atlantic

STILL IN USE

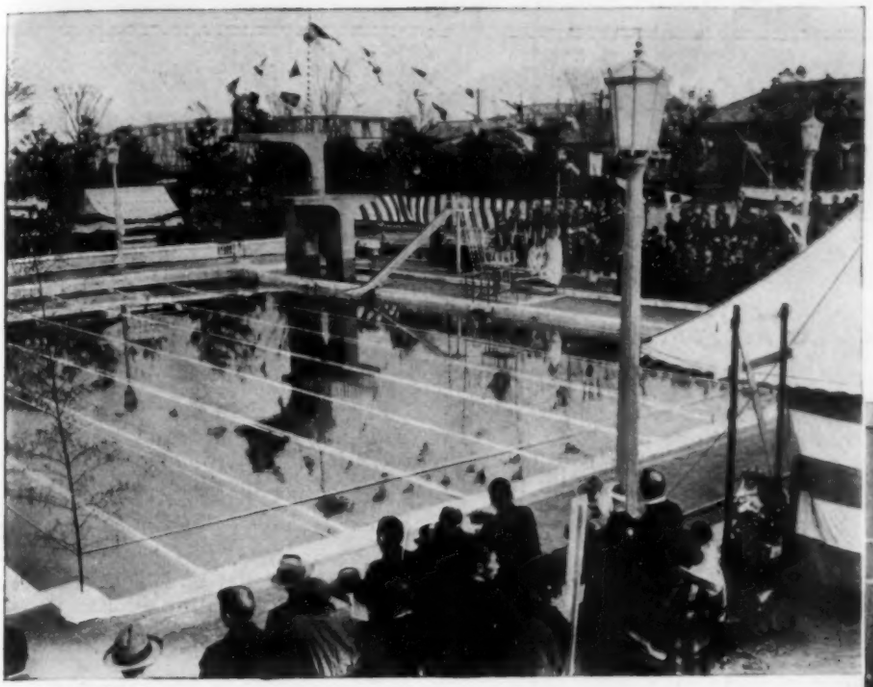
This still, along with others that have been confiscated by the police of Washington, D. C., has been turned over to the patients at Walter Reed Hospital. The sick soldiers make good use of the brass parts, converting them into bowls, lamps, ash trays and other useful and salable articles. An instructor teaches them design and methods.

WASHABLE GYM SUITS

Cotton gymnasium rompers are being worn by Smith College girls these days. One of the suits in action is displayed by Miss Nancy Boothby, a freshman basketball star.

Pacific and Atlantic

JIU JUTSU LESSONS ARE PART OF THE INSTRUCTION the police get in the District of Columbia



International

AN ORIENTAL SWIMMING POOL

Colorful ceremonies marked the recent opening of the largest swimming pool in the Orient. The pool, which is in Tokyo, has high diving boards, chutes and all the equipment of an occidental outdoor pool.

IF YOU THINK IT'S EASY, TRY IT

Tap dancing seems to be the popular indoor sport these days. Classes in the latest stage dance routines are springing up everywhere. Three hundred students in one women's college are studying tap dancing.

Underwood and Underwood

International

NOT A GOLD DIGGER

Elizabeth Carey of Bellingham, Wash., is a student of mining. When the mines rescue car of the U. S. Department of Commerce visited her college recently, Miss Carey enjoyed the distinction of being the first woman ever to participate in the gas mask instruction offered mining classes by the government.

HEALTH *and the* SCHOOL

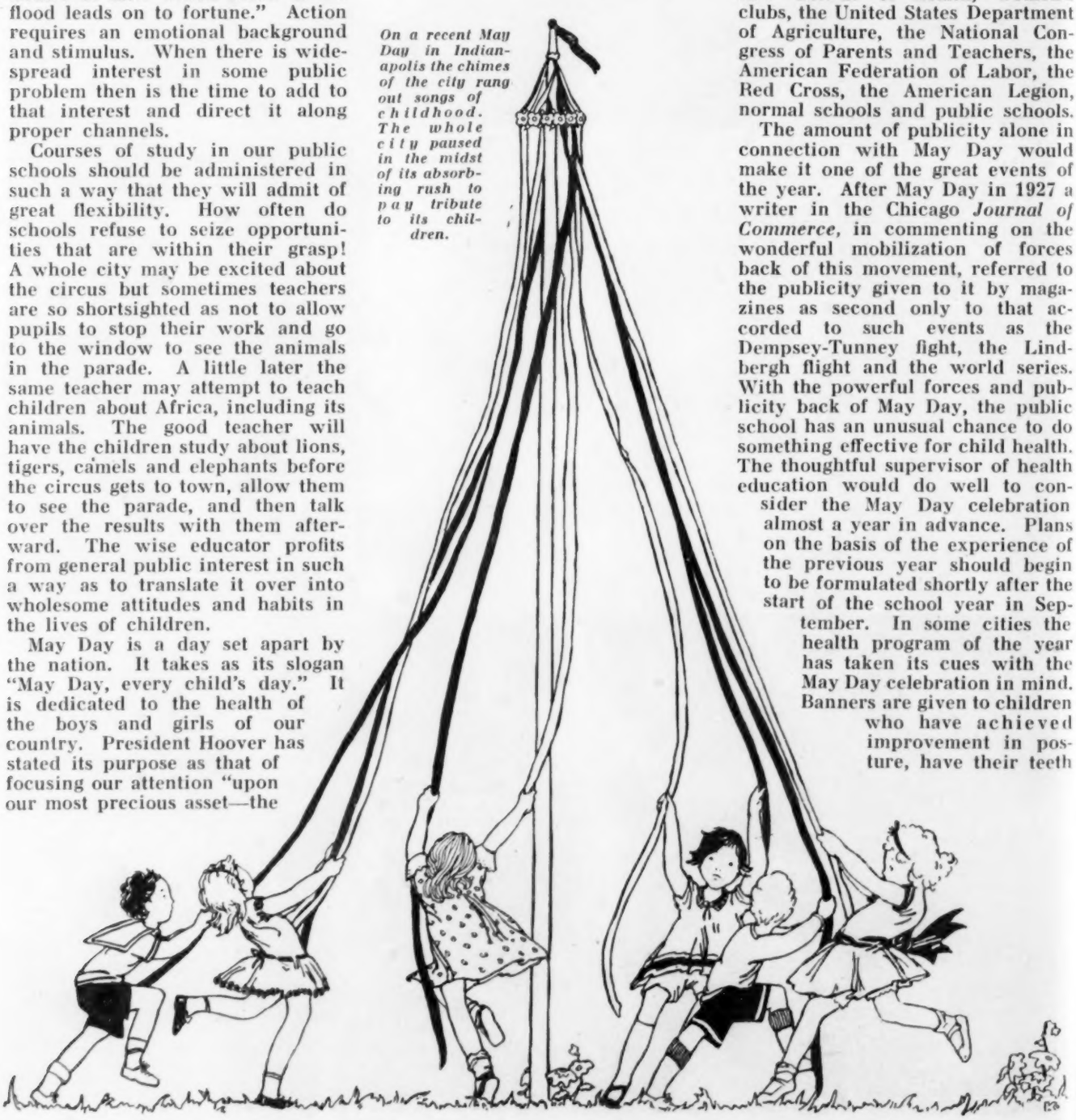
Edited by
J. Mace Andress, Ph.D.
67 Clyde Street, Newtonville, Mass.

Your Opportunity on May Day

LONG ago Shakespeare put into the mouth of Julius Caesar those immortal words: "There is a tide in the affairs of men which taken at the flood leads on to fortune." Action requires an emotional background and stimulus. When there is widespread interest in some public problem then is the time to add to that interest and direct it along proper channels.

Courses of study in our public schools should be administered in such a way that they will admit of great flexibility. How often do schools refuse to seize opportunities that are within their grasp! A whole city may be excited about the circus but sometimes teachers are so shortsighted as not to allow pupils to stop their work and go to the window to see the animals in the parade. A little later the same teacher may attempt to teach children about Africa, including its animals. The good teacher will have the children study about lions, tigers, camels and elephants before the circus gets to town, allow them to see the parade, and then talk over the results with them afterward. The wise educator profits from general public interest in such a way as to translate it over into wholesome attitudes and habits in the lives of children.

May Day is a day set apart by the nation. It takes as its slogan "May Day, every child's day." It is dedicated to the health of the boys and girls of our country. President Hoover has stated its purpose as that of focusing our attention "upon our most precious asset—the child." Congress passed a resolution requesting the president to issue a proclamation setting aside May Day as Child Health Day to be recognized in every state of the Union. Since that time almost every organization interested in childhood has entered into the May Day picture—boards of health, women's clubs, the United States Department of Agriculture, the National Congress of Parents and Teachers, the American Federation of Labor, the Red Cross, the American Legion, normal schools and public schools.



On a recent May Day in Indianapolis the chimes of the city rang out songs of childhood. The whole city paused in the midst of its absorbing rush to pay tribute to its children.

The amount of publicity alone in connection with May Day would make it one of the great events of the year. After May Day in 1927 a writer in the Chicago *Journal of Commerce*, in commenting on the wonderful mobilization of forces back of this movement, referred to the publicity given to it by magazines as second only to that accorded to such events as the Dempsey-Tunney fight, the Lindbergh flight and the world series. With the powerful forces and publicity back of May Day, the public school has an unusual chance to do something effective for child health. The thoughtful supervisor of health education would do well to consider the May Day celebration almost a year in advance. Plans on the basis of the experience of the previous year should begin to be formulated shortly after the start of the school year in September. In some cities the health program of the year has taken its cues with the May Day celebration in mind. Banners are given to children who have achieved improvement in posture, have their teeth

in first class condition and gain in weight. There are parades of children carrying flags and banners, athletic events, and May pole dances.

In the midst of such a glorification of health the churches might well be invited to cooperate, as they did in Indianapolis. On a recent May Day in that city the chimes of the city rang out songs of childhood. The whole city paused in the midst of its absorbing rush to pay tribute to its children.

Even if the town and school system do little or nothing in the way of celebrating May Day, the classroom teacher still has a chance to make May Day worth while. She may start the year with the goal of getting every remedial defect of the children removed. Many teachers have been able to influence children and parents so tactfully that all the children's teeth were in perfect condition on May Day. Such achievements should be celebrated in an appropriate way.

Parents are often invited to the school on May Day to witness a health play. The principal of the school, the superintendent of schools or the mayor of the city may be induced to make a speech. There are many original and practical things that teachers and children can work out if they try.

Suggestions and printed matter can be secured through the American Child Health Association, 370 Seventh Avenue, New York. Among the helpful publications of this organization bearing on May Day are the following:

The Story of May Day by Katherine Glover.

May Day Festival Book of 1927, The Goal of May Day, A Festival Book for May Day—Child Health Day, all by Grace T. Hallock.

MATERIAL ON CLOTHING

An extensive bibliography containing 1,184 entries on the subject of clothing as related to health has been compiled by Ruth O'Brien, Esther C. Peterson and Ruby K. Worner of the bureau of home economics.

TEACHING HEALTH

(In this column will be published each month concrete examples of good health teaching. Teachers are invited to send in contributions not exceeding 600 words and preferably less to the editor of this department. Illustrations of the actual work of children will be welcomed. Contributions accepted will be paid for but no manuscripts will be returned.)

MAY DAY, OLD AND NEW

ANNOUNCER: The children of the Angell School will now present to you May Day, Old and New. ["Song of the May Morning" by pupil, representing the Spirit of Spring.]

["Spring Song," by the fifth grade.]

ANNOUNCER: When spring comes with its grass and flowers all the world is glad. The fairy of spring awakens Sleeping Beauty and tells her that spring has come.

FAIRY OF SPRING: Waken, Waken, Sleeping Beauty! Spring has come and all the flowers are waiting for you to greet them. Waken, for it is time to dance and sing and make merry.

SLEEPING BEAUTY: How beautiful the earth looks! How lovely are the flowers! How brightly the sun shines! It must be May Day! Come dance with me in the meadows, dear fairy.

[Song—"Tales of Spring" by the first grade.]

[Song—"Winding the May Pole" by the fourth grade.]

ANNOUNCER: The joy of spring reaches the hearts of everybody. Far back in history the people celebrated the gladness of spring with dancing, singing and outdoor sports. Let us take you back to the May Day merry-making of long ago. The Romans held carnivals in May to Flora, the goddess of flowers. The Queen of May represents the gentle goddess of flowers. We are now back in the ancient times at the festival of flowers. (The May Queen approaches.)

[Song—"Joy Bells" by the lower grades.]

["Dance of the Flowers" by the fifth grade girls.]

ANNOUNCER: Long ago in England as you all know lived Robin Hood and his merry men. On May Day they always held high carnival in Sherwood Forest. Maid Marion, a fair maid beloved by Robin Hood, comes forth on a bright May morning.

MAID MARION: In Maytime when the leaves are green and flowers are fresh and gay, Robin Hood and his merry men were all disposed to play.

ROBIN HOOD: Ah, Maid Marion, merry it is in the greenwood when the deer sweeps by and the hunter's horn is ringing.

MAID MARION:
Dost thou know 'tis May Day?

ROBIN HOOD:
By my faith, and May Day it is. One blast on this horn for my merry men and a gay day it shall be.
Heigh ho, my merry men! 'Tis May Day and we must have sports. What say you, Little John?

LITTLE JOHN:
Good master—'tis well,
The grass is green and flowers gay
Are peeping from the ground,
Let us be gay and dance and sing
In the greenwood round and round.

ROBIN HOOD:
Will Scarlet, what say you?

WILL SCARLET:
An evening feast of venison
Delicious, that would be,
Then all rejoice with merry noise
'Neath the Sherwood forest trees.

ROBIN HOOD:
Hie, hie, my lads, to the greenwoods tree
And a joyous day so free.
[Song—"Robin Hood" by the sixth grade.]
[Dance, by Robin Hood and his men.]

ANNOUNCER: When the Pilgrims came to America, they were always happy when spring came, and on May Day they hung pretty baskets of flowers and danced and sang merrily.
["Dancing in the Orchard," by the fourth grade.]
[May Basket drill by grade 2B.]

ANNOUNCER: Then came the stern Puritans. They frowned upon dancing and merry making. Governor Endicott declared that on May Day there should be no more rollicking or merry making.

GOVERNOR ENDICOTT:
There shall be no more May Day festivals
No more foolishness,
Do your work, go to church,
Say your prayers, and go to bed
At the setting of the sun.
[Song—"The Child's Prayer" by grade 2A.]

ANNOUNCER: And so the old May Day passed away. Later people began to move to cities where they saw few trees and flowers. Not many birds came to tell them of the arrival of spring. The old May Day seemed to be forgotten.
[Violin selection by pupil.]

ANNOUNCER: The spirit of spring was not to be lost, although May Day celebrations had ceased. Spring came at the usual time each year. When May Day came the people found themselves wishing for a way to express the ideas of new life and joy that filled their hearts. We shall now tell you how they found a way to give May Day a new meaning which brought them more joy and happiness than the old May Day.

FAIRY SPRING: Here I am again and May Day will soon be here. Oh, for some one to help me bring back the joys of May Day!

FAIRY HEALTH: Dear Fairy Spring, I am Fairy Health. I heard your call and I think we can work together to make an ideal May Day. You bring the lovely spring with its sunshine and flowers. But what would May Day be without children? I shall bring beautiful children with healthy bodies and minds. The New May Day will also be National Child Health Day.

FAIRY SPRING: You are right, Fairy; health and happiness go together. Let us listen to Herbert Hoover, president of the United States. He will tell us what the children need to make them happy and healthy.
[Song—"Hail to the Chief" by the fifth and sixth grades.]

PRESIDENT HOOVER: I shall now read "The Child's Bill of Rights."

FAIRY SPRING: President Hoover is right. The children of America must be made strong and healthy so that they can enjoy our beautiful country.
[Song—"America, the Beautiful."]

FAIRY SPRING: The New May Day will be very beautiful with its flowers, May baskets and strong healthy children singing and dancing.
[Enter fairies of Healthland.]

FAIRY HEALTH: Here are my health fairies. They come to help and also to bring good wishes to the children. Fairy Health waves her wand and calls in her fairies.

FAIRY HEALTH: Blue Ribbon Fairy, the fairy of Healthy Children.

BLUE RIBBON FAIRY:
I live with the fairies of Healthland
A world of sunshine and flowers
Where we live together, a happy band
And a wonderful work is ours.
We've guarded your health the whole year long
And now on this bright May Day
We've come to give you our wishes true
In hopes that you will win a ribbon of blue
And become health children today.

CHORUS

(Tune—"Reuben, Reuben")

Fairy, fairy, we've been thinking
That you're very kind and true,
To come on this bright day to greet us
And wish for us all a ribbon of blue.

FAIRY HEALTH: Fairy Cleanliness.

FAIRY CLEANLINESS: I wish all children to be beautiful and clean. I give you clear water to drink and water to bathe in each day.

CHORUS

(Same tune throughout)

Fairy, fairy, we've been thinking
How clean and healthy we would be,
If clear water we'd drink daily
And take each week baths one, two, three.

FAIRY HEALTH: Fairy Milk.

FAIRY MILK: I wish all children to be rosy and of normal weight. I give you pure white milk to drink, four glasses each day—but, mind, no tea or coffee.

CHORUS

Fairy, fairy, we've been thinking
How round and rosy we would be,
If we'd drink your sweet milk daily
And never think of coffee or tea.

FAIRY HEALTH: Fairy Sleep.

FAIRY SLEEP: I wish all children to grow tall and strong. I give you ten hours of sleep each night with plenty of fresh air coming in through wide open windows.

CHORUS

Fairy, fairy, we've been thinking
How tall and strong we all would be,
If each night we'd sleep ten hours
With fresh air blowing cool and free.

FAIRY HEALTH: Good Teeth Fairy.

GOOD TEETH FAIRY: I wish all children to have white pearly teeth. I give you the tooth brush to brush your teeth at least twice a day. Please remember that too much candy decays the teeth.

CHORUS

Fairy, fairy we've been thinking
How white and strong our teeth would be,
If we'd use a toothbrush daily
And eat just a little sweet candy.

FAIRY HEALTH: Fresh Air Fairy.

FRESH AIR FAIRY: I wish all children to be strong and free from disease. I give you pure fresh air to chase the germs away while you play outdoors each day.

CHORUS

Fairy, fairy, we've been thinking
How free from germs we all would be,
If outdoors we'd play with fresh air
Walk, run, hop, skip, one, two, three.

FAIRY HEALTH: Fairy Sunshine.

FAIRY SUNSHINE: I, too, wish all children to be strong and free from disease. Wherever I shine the germs disappear, but I make the lovely flowers bloom for your pleasure. Play outdoors in the golden sunlight. I will make you strong and well.

CHORUS

Fairy, fairy, we've been thinking
How free from germs we all would be,
If outdoors we'd play with fresh air
Walk, run, hop, skip, one, two, three.
Fairy, fairy, we've been thinking
Of the golden sun and flowers too,
How we love to play in sunshine
And for the flowers we all thank you.

FAIRY HEALTH: Good Food Fairy.

GOOD FOOD FAIRY: I wish all children to eat good foods. A good breakfast, a good lunch, and a good dinner. I give you the fruits and the vegetables.

CHORUS

Fairy, fairy, we've been thinking
Just how healthy we would be,
If vegetables green we'd eat at mealtime
And juicy fruits from off the tree.

FAIRY HEALTH: Posture Fairy.

POSTURE FAIRY: I wish to see all children sit and stand erect. I give you straight and beautiful bodies.

CHORUS

Fairy, fairy, we've been thinking
How beautiful we all would be,
If we all had perfect posture;
Yes, splendid that would be to see.

FAIRY HEALTH: Fairy of Good Thoughts.

FAIRY OF GOOD THOUGHTS: I wish all children to have good kind thoughts and be true to their flag of Red, White and Blue.

CHORUS

Fairy, fairy we've been thinking
How then the world would be,
If our thoughts were good and kindly
And true to the flag each day we see.
[Song—"Our Flag Colors" by the third grade.]

CHORUS

Thank you, thank you, gentle fairies,
We shall try to healthy be;
We shall all be Good Health Children,

On next May Day you shall see.
[Song—"Soldier Boys" by the second grade.]

ANNOUNCER: The Angell School children have been working this year to be Blue Ribbon Children, which means that they have passed a satisfactory physical examination. At this time our school physician will award blue ribbons to all those who are ready.

[Blue Ribbon Dance by the sixth grade girls.]

[Flag Drill by the sixth grade boys.]

[Star Spangled Banner—All.]

MARY MACLENNAN,
Angell School,
Highland Park, Mich.

GETTING RESULTS THROUGH HEALTH HABIT CHARTS

"MAY I be the doctor next week?" asks a little boy of his teacher just before dismissal on Friday afternoon.

Miss Gray consults her class books, and from the breathless eagerness that pervades the room, a visitor would realize that being "doctor" is indeed a coveted privilege.

"I am sorry, John, but it will be Henry's turn next week, and Mary will be nurse," answers the teacher. Henry and Mary appear happy.

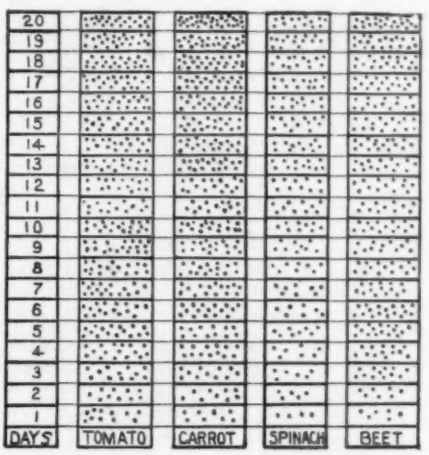
"What can it mean?" asks the visitor to herself, and promises to visit that schoolroom during the ensuing week to discover just what the doctor and nurse will do.

If the visitor appears some morning before the last gong rings, she finds the pupils in their seats working or reading books from the reading table. Mary and Henry passing quietly up and down the aisle attract her attention. The boys are checked by Henry and the girls by Mary. Hands are held out, and the owner is given a check if they are clean; hair is examined to see if it is neatly combed; a clean handkerchief or piece of cloth is produced; and these, combined with a clean face, entitle the owner to a star for that day. The nurse and doctor write that pupil's name on a slip of paper and pass on to examine the next girl and boy. When all have been checked, the nurse and doctor take down the health habit chart from its place on the blackboard, lay it on a convenient table and proceed to give each boy or girl his cleanliness rating for the day.

So interesting are these proceedings that the visitor has forgotten the teacher. What has she been doing while the nurse and doctor have been performing their duties? Miss Gray has been engaged in placing assignments on the board or aiding some slow pupil with his lessons. To the visitor's further surprise, she learns that this health habit check-up is taking place in nearly every schoolroom of every building in that city.

Such is the health movement that is being carried on in the Duluth Public Schools under the supervision of Miss Florence Owens, special teacher in the physical training department. It was at Miss Owens' suggestion that the teachers in the elementary grades of that city first started health charts. Many kinds were made, the most satisfactory being probably the one described in the story.

This is made of a large piece of tag board. A picture of some child activity is mounted at the top. The words "Health Chart" are usually printed below. Slits have been cut underneath in even rows, and the pupils' names printed above them. Into these slits, small cards, one side blank and the other containing a red or blue star, are placed. If a pupil fulfils the requirements of having a clean face and hands, hair neatly combed, and a clean handkerchief, the side of the card that has the star pasted to it is turned to the outside, while if the reverse is true, the blank space meets the onlooker's view. Few are the blank cards, for it is considered a dishonor. The part of the chart below the picture resembles an ordinary seat chart in construction.



A chart showing the increased consumption of vegetables in the 4A class of a Duluth school as a result of an educational program. On the first day of the month, the chart shows, only six pupils reported beets as a part of their diet. By the twentieth day this number had increased to twenty-two.

All the responsibility for the checking is carried by the pupils, thus relieving the teacher and yet producing effective results in arousing and maintaining health habits among the pupils.

PHILOMENA CROOKS,
Duluth, Minn.

NEW HEALTH BOOKS AND TEACHERS' MATERIALS

THERE are two major problems which we as educators are called upon to solve. The first is the discovery of the capacities and tendencies of children and the second is guiding these capacities and tendencies in such a way that the children may become useful and happy members of society.

These two helpful volumes[1] should be read widely by teachers and educators, for they throw a flood of light on discovery and guidance. They contain many case studies and give detailed accounts of how individual problems are solved. The cases cover a wide range and any teacher or educator, whether his school system has visiting teachers and social workers or not, will find points of view and suggestions that will be helpful.

Such books with their human problems and the record of the scientific and tactful way in which they were solved are ordinarily more helpful to the rank and file of teachers than more general books in psychology. They have the merit of being concrete. These two volumes should be put in the teachers' library of every public school. They will be exceedingly valuable as reference books in courses in mental hygiene and educational psychology.

MOST courses of study are unoriginal, dull and lacking in helpful suggestions but one reads this health education course with keen interest. Miss Jessie B. Anderson, who prepared this valuable school document[2] with the cooperation of Charles H. Hunt, director of health and physical education, is to be congratulated on an excellent piece of work.

In keeping with modern courses of study in health it aims to train the children in habits of correct living. Emphasis is placed on the plan of checking although there is frank recognition of the fact that unless there is a variety in methods and fun in doing, the performance will become monotonous. Scattered throughout the course of study are suggestions for keeping health habit records. The teacher who is fortunate enough to have this course of study before her will have clearly in mind just what outcomes are

1. The Visiting Teacher at Work. By Jane F. Culbert. Price, $1.50. Pp. 235. The Commonwealth Fund Division of Publications, New York, 1929. Mental Hygiene and Social Work. By Porter R. Lee. Price, $1.50. Pp. 309. The Commonwealth Fund Division of Publications, New York, 1929.

2. Health Education Course of Study for Kindergarten and Grades 1 to 6. Long Beach City Schools. Pp. 163.

expected of her and also will have a variety of interesting methods, suggestions and projects offered for her help. These suggestions as to approach have all been worked out carefully in preparing the course of study.

As an example of a single outcome we might note that of encouraging children to cultivate a taste for all the common vegetables. The habit of eating at least one vegetable daily, in addition to potatoes, is an outcome in the third grade but one that naturally needs strengthening in the fourth grade and the other grades to follow. This excerpt from the course of study for the third grade illustrates the general character of the way in which specific problems are treated:

Ask the children to name the vegetables that they enjoy eating. Write these on the board.

Are there any children who do not enjoy eating all the wholesome vegetables, such as celery, spinach, lettuce, carrots, beets, cabbage, tomatoes, peas and beans?

Some of the children who have learned to enjoy eating all these vegetables may tell the class of their experiences.

TOPICS FOR CONVERSATION

The fun I had in learning to like new vegetables.

The vegetable that was the hardest for me to like.

My favorite vegetable.

The children may enjoy hearing the following rhymes written by third grade pupils who were learning to eat new vegetables:

TRYING

Asparagus I am trying to like;
I have to try it with all my might.

BY AND BY

If to eat spinach
I try and try,
Maybe I'll like it by and by.

Ask the children to write down on a piece of paper the vegetables they eat each day for a period of one week. The teacher may ask to have these brought to class. When discussing the results of the week's record, note the number of children who have eaten at least one vegetable in addition to potato every day. If advisable repeat the checking for another week, and still another, until the habit is developed.

It is suggested that since the Chinese and Japanese are so fond of green vegetables that eating green leaf vegetables be emphasized while the children are studying China and Japan.

The teacher will also have in tangible form a record of success.

THE National Dairy Council, which has prepared so much valuable material for teachers, is now issuing scientific reports[3] monthly in which are reviewed and interpreted the results of recent scientific research relating to the importance of milk in the diet. The titles of these digests up to the issue of December, 1929, are as follows: Butter a Protective Food; Milk and the Growth of School Children; Diet in Relation to Teeth; Milk Needed for Best Growth; and An Adequate Diet Arrests Dental Caries.

Although the National Dairy Council is frankly concerned in selling more milk, the varied and interesting material that it issues for teachers and health workers is thoroughly scientific. At a time when textbooks become obsolete in so short a time, trustworthy information like this issued with regularity is helpful. All teachers of health will want these excellent bulletins.

THE health education service of the Dairymen's League Cooperative Association has issued an attractive booklet.[4] It advertises posters, panels, stories, plays, maps, slides, films and lectures that may be secured at a nominal price. This booklet should be helpful for teachers who wish to get new and attractive material.

IT IS a hopeful sign of the times when a school system shows its sensitiveness to the principles of mental hygiene by conducting a serious investigation in this field. The great body of educators and psychologists have been inclined to overestimate the importance of intelligence tests. The psychiatrist has reiterated his conviction that a great many failures in school and in life are due to unstable emotional development. These two documents[5] are filled with the stories of maladjusted children and the methods that were used by teachers to adjust them to life. Teachers interested in mental health will find these two documents suggestive and helpful.

THE Handbook of Physical Education[6] is a practical text which includes enough material for a year's curriculum in physical education. It is intended as a basal text for colleges and universities and as a handbook for the director of physical education in high schools. Detailed directions are given covering curriculum making, calisthenics, marching, wrestling, indoor and outdoor games and the use of apparatus in the gymnasium. The suggestions for the instructor are clear and definite.

Although the author is concerned in this text with the practical and detailed administration of a physical education program he devotes some space to the theoretical consideration of his subject. He accepts the objectives of physical education offered by Dr. John Sundwall of the University of Michigan; namely, (1) to teach health fundamentals, (2) to correct faulty posture and to prevent abnormalities due to bad posture, (3) to develop neuromuscular control, (4) to develop the desire for activity, (5) to instil a desire for recreation, and (6) to develop the mental, moral and social values.

IT IS notorious that although we have many volumes in our libraries dealing with the teaching of arithmetic, reading and spelling, the results of many experimental studies, there is almost nothing of a scientific nature on the development of a healthy personality. This problem is still in the shadowy land of trial and error. Conscious of this fact, Dr. Zachry has prepared with much care this readable and practicable volume, "Personality Adjustments of Children."[7]

In keeping with the best thought on heredity, she believes that with the exception of the original organic reflexes, ready-made adjustments to situations are not inherited. The complex patterns built up later are the result of learning, for any child is largely the result of his past efforts at adjustment. The child and the environment must be studied together.

Throughout the book, then, we are given an analysis of specific child problems and their satisfactory solution. Each human story is exceedingly interesting. This is one of the best books on mental health that has been published. The introduction by William H. Kilpatrick of Teachers College, Columbia University, is a guarantee of its educational value.

THE Pennsylvania Department of Health publishes bimonthly a health journal[8] which is free to the people of Pennsylvania. Unlike many such publications which are devoted to dry statistics and technical articles of interest only to experts it contains articles that can be comprehended by teachers and laymen. The publication also contains poems, stories and articles of general and special interest to citizens of Pennsylvania. Teachers of Pennsylvania should ask the editor to put them on the mailing list.

3. Dairy Council Digests 1-5. National Dairy Council, Chicago, 1929.

4. Pp. 17, Dairymen's League Cooperative Association, Eleven West Forty-Second St., New York, 1930.

5. The Educability of the Emotions—A Suggested Discussion Approach. School Document No. 2. Pp. 127. Boston Public Schools, 1927. Training the Emotions Controlling Fear. School Document No. 2. Boston Public Schools, 1928.

6. By Ernest G. Schroeder. Pp. 323. Doubleday, Doran and Company, Garden City, N. Y., 1929.

7. By Caroline B. Zachry. Price, $1.80. Pp. 306. Charles Scribner's Sons, New York, 1929.

8. Pennsylvania's Health. Pp. 32. Pennsylvania Department of Health, Harrisburg.

New Books *on* Health

Reviewed by Morris Fishbein, M.D. and Others

GETTING WELL AND STAYING WELL

By John Potts, M.D. Introduction by J. B. McKnight, M.D. Cloth. Price, $2. Pp. 221. C. V. Mosby Company, St. Louis, 1929.

THIS book is primarily for the tuberculous patient and provides essential scientific facts for the cooperation of the patient and his doctor. The steps in diagnosis are explained and the necessity of learning how to live hygienically are stressed. Suggestions for the daily routine suited to the various types of cases, what evidences of improvement the patient may expect and the outlook for recovery are particularly useful. The patient is warned of the danger of being victimized by quacks and is impressed with the necessity of placing himself under competent care.

The chapter on symptoms that should prompt one to suspect tuberculosis is a masterpiece, informing the patient both of his own responsibility and that of his doctor. The question of climate, which comes to every patient, is made subservient to the necessity of early diagnosis and rest.

This book answers the numerous questions concerning tuberculosis which come into the minds of patients, their families and their physicians.

THE HUMAN MIND

By Karl A. Menninger. Pp. 447. Price, $5. Alfred A. Knopf, New York and London, 1930.

PSYCHIATRISTS are concerned with the human mind and understanding. They study the changes that go on in human personality and the reasons for many of the aberrations that occur in human thought. Dr. Menninger realizes that any one that achieves anything is *a priori* abnormal, including geniuses, presidents, leaders and great entertainers. However, that type of abnormality must be distinguished from the type that is asocial, or even antisocial. He has written his book out of the material of human life as it has been seen by him in his practice of psychiatry and in the current press. It is a book about the mind and not a book about the soul. It is, therefore, a scientific book and not a fanciful document.

"The Human Mind" is in every sense of the word a companion book to "The Human Body" by Logan Clendening. It is written with the same verve, with the same type of humor and sympathy for mankind that marks the Clendening volume. It is, moreover, a much more interesting book for the reason that it is fully illustrated with case reports as fascinating as fiction, and by their very truth beyond fiction in interest.

The six sections of the work include the principles of psychiatry, the study of personalities, the symptoms that are characteristic of abnormal mental states, the motives that represent the driving impulses of human conduct, the common methods of treatment employed in modern psychiatry, including both physical and mental methods, and, finally, a conception of what psychiatry will be in the future and a bibliography.

The book is for the intelligent layman. It was selected by the Literary Guild as its book for the month of February. Readers who select their own literary pabulum will certainly not find it disappointing.

ALL ABOUT THE BABY

By Belle Wood-Comstock, M.D. Pp. 354. Pacific Press Publishing Association, Mountain View, Calif., 1930.

THIS volume concerns home-making and training of the child from birth to the age of 3 years. It begins with the story of life and human relationships, the effects of heredity and prenatal influences. It is intended chiefly to overcome errors in bringing up children and instructs the mother so as to lessen her anxiety, lighten her labors and make possible the attainment of the highest standard of individual possibilities in the child.

Information is given on the mother's care and diet, the baby's arrival, the problems of bottles and formulas, how to safeguard against malnutrition and rickets and what to do when the baby is sick. In keeping with advanced ideas, the book stresses the baby's physical, nervous and emotional needs in preparation for a better understanding of the principles of habit training in the plastic period of the child's preschool age.

"In the development of the child's disposition and personality certain traits become assets by being properly controlled and directed; others become of great value by being developed." This volume instructs parents on how to go about it. Facts are presented in an interesting manner for the average reader and they can well be studied not only by parents but by every young man and woman who contemplates marriage.

The book is written from a highly moral point of view and emphasizes dangers from tobacco, alcohol and coffee. It also urges the use of whole wheat as against white bread and farina in the baby's diet.

ULTRAVIOLET LIGHT AND VITAMIN D IN NUTRITION

By Katharine Blunt and Ruth Cowan. Price, $2.50. Pp. 211, with illustrations. Cloth. The University of Chicago Press, 1930.

TODAY every one is interested in the value of natural and artificial sunshine and the utility of food vitamins. In this book appear explanations of the potency of ultraviolet light, of the filtering action of the different types of window glass and clothing and of the production of artificial rays. Especially interesting is the explanation of the remarkable action of the rays on what is known as ergosterol to produce vitamin D. From eight to ten drops of irradiated ergosterol (officially known as viosterol) is equivalent to from three to five teaspoonfuls of cod liver oil.

Parents are particularly interested in the disease called rickets, in which an insufficiency of storage of calcium and phosphorus in the body produces bow legs, tooth decay, beaded ribs and general physical debility. The vitamins are shown to correct tooth decay. The authors emphasize that during pregnancy and lactation the big demand for a storage of calcium and phosphorus necessitates care in the choice of a diet, the use of cod liver oil (or its equivalent in drop doses) and much sunshine. Reasons are also given for the value of cereals, orange juice, milk and the new irradiated foods.

The volume is written primarily for the physician but parents and others interested in child health can get from it a clear conception of the beneficial effects of light rays on the growing child.

Questions *and* Answers

If you have a question relating to health, write to "Questions and Answers," HYGEIA, enclosing a two-cent stamp. Questions are submitted to recognized authorities in the several branches of medicine. Diagnoses in individual cases are not attempted nor is treatment prescribed.

Tattooing the Cornea

To the Editor:—There is some process by which blind eyes are tinted to look their natural color. Do you know how this is done and how long it will last?

C. F. C., Louisiana.

Answer.—The cornea, which is the rounded glassy portion of the eye, can be tattooed by any one of several accepted methods so that it will lose to a great extent the dead fish appearance. The tattooing, which is a perfectly painless procedure, is performed in much the same manner as the tattooing of the skin.

The most common operation is to tattoo an artificial black pupil, but other colors can be tattooed by using the pigment and technic of Professor Holth of Norway. The one unfortunate feature is that the color seldom lasts for more than three or four years and has to be renewed.

"Airplane Bacteria"

To the Editor:—In our research work at school we discovered in one of the papers an article stating: "Spores of plant bacteria trapped by airplane two miles high lead scientists to believe that great pestilences like Black Death of the Middle Ages may have been carried from country to country through clouds." We should like to know if there are disease germs at that altitude. Would the means of waste disposal from airplanes in any way affect this condition? Any information you can give would be greatly appreciated.

L. S., New York.

Answer.—Even the airplane cannot revive worn-out theories of airborne disease. At one time many infective agents without evident means of spread were presumed to float about in the air. Their actual modes of transmission have since been discovered, almost always proving to be other than by the wind. The cited instance, black death or bubonic plague, is a disease of rats; its germ is disseminated through the migrations of that rodent and conveyed by fleas to other rats and to man.

Disease germs are quickly scattered by outdoor air currents and, after being blown any distance, are too few to infect; if, indeed, they are not actually dead. The only ones likely to reach the airplane's altitude are those taken up in the plane itself. They could not render the winds infective.

Cod Liver Oil for Adults

To the Editor:—What would you say is the value of cod liver oil in the interest of general health for an adult?

E. K. C., New York.

Answer.—Cod liver oil is undoubtedly of value in improving the general health of an adult whose diet may be deficient in those substances necessary to the maintenance of normal health but present in relatively large quantities in the oil.

The most important ingredients of cod liver oil are the high fat content and the vitamins A and D.

These important ingredients may, however, be obtained by including in the diet other foods that contain these vitamins.

Fats may be increased by the use of rich milk or cream as an addition to cereals and puddings; also by the use of butter and fat meats.

Vitamin A is found in milk, butter and leafy vegetables, while vitamin D is present in large amounts in the glandular organs, such as kidney and liver of both land and marine animals.

A diet including these foods to a reasonable extent will undoubtedly help to increase the resistance.

Susceptibility to Communicable Diseases

To the Editor:—I just read in a hygiene reference book that a person having had a communicable disease is more susceptible to another attack than one who has not had it. I never heard or read that before and, as there are so many poor books on hygiene, I questioned it. Will you please let me know the facts?

M. B. M., New York.

Answer.—A person having had a communicable disease is, in most cases, less susceptible to another attack. Elderly persons, however, often have repeated attacks of bronchopneumonia. Although recurrent attacks of erysipelas occur, they are the exception rather than the rule.

Decayed Wisdom Teeth

To the Editor:—Please let me know if it is harmful to leave a wisdom tooth that is decaying in the mouth? Does it poison the system in any way? Are wisdom teeth weaker in structure than the other molars?

E. B., Minnesota.

Answer.—It is always harmful to leave any decaying tooth in the mouth for an extended time. The usual sequence of trouble is an exposed pulp (nerve) with pain, followed by death of the pulp and subsequent abscess. It does not poison the system till an abscess has formed. These teeth are usually not as well developed as other molars, but occasionally they are.

Softening of Water

To the Editor:—I am desirous of securing a really dependable opinion in regard to drinking water that has gone through the usual type of water softener; that is, one that is reconditioned by the use of salt. Some contend that this water is not fit to drink, others that it is just as good or better than the regular artesian water with which our city is supplied.

W. F. H., Michigan.

Answer.—The softening of the water to which our correspondent refers is done by means of zeolite filters; this results in the exchange of calcium and magnesium compounds (lime and magnesia) for an equivalent amount of sodium compound (soda). According to good sources of information, there is no way in which this chemical change would impair the potability of the water.

There are several entire city supplies that are treated by means of zeolite filters; as far as the literature shows no harmful results are reported. The public in general does not realize that even in a very hard water the total amount of mineral matter present is a relatively minute quantity, usually not more than five-hundredths of 1 per cent, and that the human system does not depend upon water for mineral substances with the possible exception of iodine. The iodine content is not changed by the zeolite filters. Therefore, a complete change in the kind of mineral matter may be said to be practically without effect on

human beings. It is general experience that persons thrive equally as well on water which is practically as free from mineral matter as distilled water as on water which contains a relatively high amount of mineral substances.

It would seem unnecessary to state that the ordinary rules of cleanliness should be observed in handling the salt for the regeneration of the softener.

Tularemia

To the Editor:—Does an attack of tularemia produce a permanent immunity? Are other animals, such as quail and squirrels, susceptible to tularemia?

M. L. C., Tennessee.

Answer.—There is apparently only one case on record of a second attack of tularemia. This occurred in a laboratory worker two years after the first attack. Agglutinins to *B. tularense* persist for a long time after recovery from the disease. This may indicate a persistent immunity. Laboratory animals have not shown immunity.

One case is on record of infection after injury of the hand while dressing a quail. The infection has been found in rabbits of several species and in ground squirrels and has been demonstrated in wood ticks (*Dermacentor andersoni*) and in ticks collected from vegetation, horses, mountain goats, woodchucks and ground squirrels.

The disease is transmitted from rabbit to rabbit in the wild state by the rabbit louse and the rabbit tick, neither of which bites man, and to laboratory animals by the mouse louse, the common bed bug and the biting stable fly (*Stomoxys calcitrans*).

Infections in man have followed bites by the deer fly as reported by Edward Francis and by Francis and Callender. One case is recorded of acquisition of the infection after skinning opossums which had "bumps on their bellies."

Occupations for Epileptics

To the Editor:—Where could I be advised as to some form of employment for my son, who is 30 years old and is troubled with epilepsy. We lived in the country and kept chickens but were obliged to move to town. He cannot do hard work. Perhaps he and I could do something at home. You may know who can suggest or advise different occupations.

C. V. T., Michigan.

Answer.—In the case cited it would be advantageous to know the frequency and severity of the seizures. Some of the possible occupations at home for persons suffering with epilepsy are: sewing on clothing for manufacturers, picture developing, printing and framing, bench work, such as the making of wooden toys and small articles of furniture, making artificial flowers and addressing envelopes. Rug weaving and basketry have an occupational value, but are not particularly remunerative. Some of the trades that may be carried on at home are tailoring, shoe repairing and upholstering. Gardening is also a possibility.

In general it may be said that epileptics should avoid any occupation that requires working above the floor level or that would endanger the person by burns or injury from machinery. They most positively should not drive automobiles. As a rule they are detailists and for that reason are rather slow, but often the work is well done. They seem to get along best when they avoid crowds. In a particular case it would be well to consult the welfare department if there is one in the community, but, if not, the visiting nurse of the health department may offer helpful suggestions.

Encephalitis

To the Editor:—What is the cause and what are the symptoms of encephalitis and encephalitis lethargica?

C. A. McC., California.

Answer.—Encephalitis means, literally, an inflammation of the contents of the cranium, but is applied to inflammation of the tissues of the brain as distinguished from the membranes that cover the brain and spinal cord—meningitis. The form usually referred to and the one which occurs as an epidemic is known as epidemic encephalitis, encephalitis lethargica, epidemic stupor, infective encephalitis and sometimes epidemic polio-encephalitis. It is defined in a recent standard textbook as "an infectious disease with protean manifestations distinctly in the central nervous system, characterized by lethargy, paralysis of the cranial nerves (usually the third) and, in some cases, spinal and neuritic features."

Descriptions in the literature indicate that the disease occurred as early as 1712 in Germany and in 1890 in parts of southern Europe, at which time the name "nona" was given to it. Cases occurred in Austria and France in 1916, and in England in the spring of 1918, and it was thought for a brief time to be a manifestation of influenza.

The word "protean," which occurs in the foregoing definition, should be emphasized. There are few diseases that show such a wide variety of signs and symptoms as encephalitis of this type. In discussing the forms that this disease may take, this textbook enumerates fourteen that are quite distinct.

It is impossible to give any adequate description of this disease in such a reply as this. We know of no popular article on the subject but believe the inquirer could read with understanding such a description as is given in one of the standard textbooks on medicine, such as that by Strumpell, or a recent edition of Osler's "Practice of Medicine" edited by Doctor McCrae.

Diphtheria Carriers

To the Editor:—If, in a diphtheria carrier, a biologic test is made to determine the degree of virulence of the diphtheria bacilli and these are found to be harmless, have the bacilli ever been known to become virulent later in the carrier? That is, may we safely assume that if they are now harmless, they will remain harmless? H. R., Illinois.

Answer.—It seems to be generally accepted that strains of diphtheria bacilli which are shown to be avirulent by the biologic test do not regain their virulence. In absolutely pure strains of bacteria individual micro-organisms acquire new characters, which are manifested by a change in the type of colony produced and by loss of virulence. This change occurs as a sort of mutation, and is almost always in the direction of virulent to avirulent types; only with great rarity in the opposite direction. The possibility of such a reverse mutation should be borne in mind but the likelihood of its occurrence is probably small.

Avirulent diphtheria bacilli in the throat do not induce immunity in the carrier. It would add to the safety of such a person to be given a Schick test to determine his degree of natural immunity.

Epileptic Colonies

To the Editor:—I should like information regarding epileptic colonies, under what management, requirements for admission, whom to address and any other information available. The epileptic concerned is unmarried and without means, unless relatives can be induced to come forward. It is not a case for the criminal or insane ward. The man could work enough to pay for his keep.

C. T. C., Oregon.

Answer.—We know of no institution for indigent epileptics except the few state colonies, and these accept only residents of the state as a rule. The Sonyea Colony in New York State might accept patients from other states, but they would probably have to be paid for.

Diabetic Diet; Pains in Colon; Progressive Relaxation

To the Editor:—1. A male member of my household, 51 years old, has developed diabetes. His case is not severe enough to need insulin. His physician says he may have soy bean flour, and I should like to learn how to use it. Lima bean flour is also on the market with the claim that it is almost starchless. Is that true? Can the bean be used in the usual way of cooking? If 10 per cent fruits can be used cooked in their weight of water, would the 15 per cent and 20 per cent fruits require more water than their own weights? 2. Another member of the household, a woman, 54 years old, has been troubled for a number of years with pain in the transverse colon, occurring only in the night and always about 2 o'clock. Her diet is a moderate one of fruit, vegetables and meats. There will be long intervals when she is free from the trouble, and then it suddenly reappears, the attacks lasting a couple of hours. Relief can be obtained by a strict diet of meat, milk, eggs and thoroughly toasted bread; gradually she resumes her ordinary diet. Do these symptoms indicate ulcer? Or could they be of nervous origin attendant on the menopause? They began at the beginning of the change, although the menses have now been absent for six years. Other emotional symptoms persist and the patient has been advised to use ovarian substance tablets. Are they an effective remedy? 3. Is the method of relaxation as worked out by Dr. Jacobson of the University of Chicago available to the public?

L. A. B., California.

Answer.—1. Some excellent books are to be had for the use of the diabetic patient under the direction of his physician. These books instruct the patient on how to examine his own urine, how to determine the amount of sugar present, how to estimate the caloric value of the foods, what are the best foods and how to prepare them. One of these books is "A Primer for the Diabetic Patient" by Wilder, Foley and Ellithorpe, published by W. B. Saunders of Philadelphia and priced at $1.50.

The soy bean is discussed in this book and directions are given for the preparation of soy bean muffins. Soy bean has a great advantage as diabetic food in that it contains almost no carbohydrate and starchy material and has an abundance of protein and fat. Lima beans contain a considerable quantity of starch, and while they may be properly used under the direction of a physician where the food is being carefully prescribed as to its content of starch or sugar, fat and protein, it is not a safe food to be used without such an estimate.

There is no reason why the water used in cooking fruits, if water is used, should vary in amount no matter what percentage of starch and sugar the fruits contain.

2. As to the abdominal pain complained of by one member of the household, it is impossible to make an intelligent diagnosis in the absence of a personal examination and careful study of the case. The symptoms do not point very markedly to ulcer. It is possible that the nervous disturbance is an important factor. There is wide variance in the reports in reference to the use of ovarian substance. The majority of physicians have been greatly disappointed in the results obtained from it. Others think they get good results in certain cases.

3. The method of relaxation about which inquiry is made is best practiced under the direction of a physician.

Leukoderma

To the Editor:—What is the cause and remedy for leukoderma? Is there any way to localize it; that is, keep it from the face?

W. E. B., Ohio.

Answer.—The cause of leukoderma, more commonly known as vitiligo, is unknown. There is no satisfactory treatment for this disorder and no known method of preventing its spread. In rare instances the disease retrogresses and disappears. It is responsible for no symptoms other than disfigurement.

Heredity and Sterility

To the Editor:—1. Do children of a cross-eyed mother inherit crossed eyes? If so, is it a rare occurrence or is it usual? 2. A girl, 18 years old, with no particular worries outside of a fairly hard college course for one year and with irregular feeding habits during that time, has prematurely gray hair. The hair is mostly brown, but there is a considerable amount of gray or white hair. Is this premature grayness an indication of her inability to bear children, either by reason of sterility or by reason of the girl having aged physiologically beyond the age limit for childbearing?

F. F. F., Louisiana.

Answer.—1. There is no reason to expect that the children of a cross-eyed mother will be cross-eyed. It is, of course, a possibility, since a child of parents whose eyes are normal may develop a crossed condition of the eyes as a result of muscular weakness or eyestrain.

2. Prematurely gray hair is a condition rather common in some families. Unless the gray hair is associated with poor health, there is no reason to believe that it would have any bearing on reproduction.

What Is a Contusion?

To the Editor:—What becomes of contusions? Do they disappear entirely? Do they become cancerous and have to be cut out?

E. N. Y., New Jersey.

Answer.—A contusion is the technical name given to a bruise. In the vast majority of cases bruises disappear completely. To what extent a bruise may be predisposed to develop into cancer is something about which there is a difference of opinion among medical men.

Teeth and Gums

To the Editor:—What causes the nerve of a tooth to die? What causes a root abscess? How can pus-producing germs reach the root of a tooth? What causes the gums to become reddened in places and to hurt before a cloudy spell of weather? What might cause an infection at the margin of the gums by two teeth? Sometimes pus oozes out upon pressure of the gums by the finger. Is salt advisable as an agent with which to wash the teeth? If so, is it as good as tooth paste? Is soda harmful to the gums? Is there any way to cure gum infection provided pus is seen again? Would there be likely to be serious results from such gums?

A. C., Missouri.

Answer.—The nerve of a tooth dies usually because of the encroachment of a decayed cavity in the tooth. When the decay reaches the pulp (nerve), it causes irritation, inflammation and infection of the pulp, which leads to its death. A pulp may sometimes die under a metal filling if the filling goes so deep in the tooth as to impinge on the pulp. At times the pulp may die in a sound tooth as a result of a blow which jars the tooth and injures the pulp at the root end.

A root abscess is caused by leaving a dead pulp in the tooth without some treatment to overcome the infection. An abscess may form on the side of the root owing to the irritation of deposits lodged against the root.

There is no theory to account for the gums getting red before cloudy weather.

If pus oozes from the gum margin, the person so afflicted should consult a dentist. No one can tell the cause or prescribe for it successfully from a mere description of the symptoms.

In certain conditions of the gums salt may be used to advantage but it should be used only under the advice of a dentist. The same may be said of soda.

One should not neglect a case in which pus may be squeezed from the gums; it may eventually lead to loosening of the teeth.